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EKO: ECONOMICS AND ORGANIZATION OF INDUSTRIAL PRODUCTION

No. 7, July 1982

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ANNIVERSARY OF 'ELEKTROSILA' ELECTRIC GENERATOR ASSOCIATION NOTED

Novosibirsk EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 7, Jul 82 (signed to press 26 May 82) pp 3-12

[Article by APN correspondent N. S. Yampol'skaya from Leningrad: "Under the Sign of the Golden Mercury"]

[Text] Recently Elektrosila celebrated its 80th anniversary. It received its present energetic name in 1923. Prior to that over the main gates of the enterprise read: "Siemens--Schuckert Plant." This same mark could be found on the plant's first machines which any St. Petersburg carter could have transported. The first power generated by these machines illuminated the chandeliers in the Emperor's apartments in the Winter Palace.

When after the October Revolution V. I. Lenin pronounced the famous words: "Communism is Soviet power plus the electrification of the entire nation," Elektrosila without aid from foreign firms which refuse to collaborate began developing the units for the first Soviet hydropower plants on the Volkhov, Dnepr and Volga. It became the basic executor for the State Plan for the Electrification of Russian [GOELRO].

Paradoxically, at that time the plant was unable to do a great deal. For example, high-voltage insulating was a mystery. While at work they elaborated its formulas, organized experiments, designed technology and equipment and sought out materials. Through the plant ran the bitter joke that the only thing that was never in short supply here was difficulties. Also paradoxical for those who refused collaboration was that when, in 1929, an authoritative commission consisting of members from Elektrosila, Volkhovstroy [Volkhov Construction Administration] and the Swedish ASEA firm (which at that time considered the Russian orders advantageous for itself) examined the generators at the Volkhov Hydropower Plant it turned out that the Elektrosila machines operated flawlessly while those of the ASEA firm did not last the guaranteed life.

Having been victorious in such a bold competition, Elektrosila wagered on leadership. In 1937, here the world's first turbogenerator with a power of 100,000 kilowatts at 3,000 rpm was developed. Since then, up to now the word "first" which according to the Dahl dictionary means "ahead of others in time" has become characteristic for virtually all the basic Elektrosila machines.

Even during the years of the war and blockade, when cots were stored next to machines, when three workers with levers manually "turned the lathe" in order to machine a mine, when the shops were in ruins (400 bombs and 1,500 shells exploded on the plant's territory) and when the ration for sawdust-filled bread dropped to 250 grams a day, the design bureau and experimental shops at the enterprise were developing Europe's first water-cooled turbogenerator with a capacity of 100,000 kilowatts.

At present, Elektrosila is an association which has created more than one-half of all the electric generating capacity operating in the USSR. Its mark stands on the units of all the major power plants of Siberia. It took several flatcars to transport one hydrogenerator from Leningrad to the Sayano-Shushenskaya GES. The great-grandfather of the modern electric power generators which could be transported on a single cart seems a curious toy....

The association is developing turbogenerators and complex equipment for modern nuclear power plants, nuclear icebreakers, as well as the Tokamak units which symbolize the hopes of obtaining controlled thermonuclear energy.

The high technical and economic indicators, the simplicity of maintenance, operational reliability and other merits have ensured the Elektrosila products a market in more than 80 nations. These include Argentina, Brazil, India, Greece, Canada, Norway, Finland and the GDR. On the international market, the Elektrosila machines have replaced individual machines made in England, the United States and Japan. Certain states completely owe Elektrosila for their electrical engineering industry.

Recently, Mrs. Giselle Ruthman, president of the UNESCO International Institute for Development, Assistance and Prestige in the auditorium of Elektrosila presented the collective with the institute's gold prize and read these words from the diploma: "...For established traditions of continuous progress." This was the institute's second prize won in the USSR. The first several years previously had been received by the Academy of Sciences.

The golden composition which is something reminiscent of rising flames will be kept in the office of the general director next to the Golden Mercury which the USSR Chamber of Trade and Industry presented for the enterprise's accomplishments in the development of technology and world power.

At such an enterprise, the position of general director, regardless of who holds it, is by itself wreathed with a halo of respect.

Each morning, a car stops by the Elektrosila gates and a person emerges who is recognized by many thousands of the association's co-workers, Boris Ivanovich Fomin, the general director. A few minutes before 8 o'clock he is alone in his office. The walls and furniture are of dark brown wood. Next to the enormous desk, the bank of telephones is still quiet.

These few minutes are essential in order to concentrate before the start of the next day which in one way or another will become a continuation of the great biography of Elektrosila and the personal biography of Fomin. These have been

inseparable for the last 10 years, that is, since Fomin became the general director. And probably for him this happened even earlier, in 1952, when he as a graduate of the Kharkov Polytechnical Institute was sent as a foreman to Elektrosila. Later on he was the deputy chief of the production department, a shop chief, deputy chief production engineer, deputy chief engineer, chief engineer and then he defended his candidate dissertation.... At the age of 43, Fomin became the general director.

Sociologists and physicians feel that this is a fine age because the mind and soul are still mobile, there is still strength while one already has a good deal of professional and living experience behind one. But advantages of experience and age are not all. Certainly, Elektrosila has more than enough intelligent and experienced specialists. The leader must be bold and even daring. Because boldness and daring have been historically inherent to Elektrosila.

One of his innovations was to support the bold idea of developing a new type of turbogenerator using the superconductivity phenomenon. Starting in 1911, the idea of superconductivity has awaited practical embodiment. And its time finally came. In the 1950's, the alloys of niobium-titanium and niobium-tin were discovered. At Elektrosila they began discussing the difficult problems involved in the physics of the new type of turbogenerators. Additional fundamental research was required on metallurgy, thermo-, hydro- and electrodynamics and mechanics as well as additional funds and time.

During those years, Elektrosila still did not have such a powerful in-house scientific research institute and it was more difficult to foresee and choose a promising question. However Fomin, having become the general director, zealously protected the work on the designing of the new machine against all production problems. And over this unwasted time it became clear that the new turbogenerators were a promising area. They were substantially smaller than the ordinary and their efficiency was a whole percent higher. This meant an enormous savings in fuel resources. The machines are needed for the development of nuclear power and can also be useful for the Tokamaks. Elektrosila again had solemnly claimed its old right of leadership.

The testing is still continuing, but the collective has begun to develop a large-capacity (300,000 kilowatt) turbogenerator using the superconductivity phenomenon. At present, the machine is already acquiring a real shape. But this is not simply a new machine, but rather the start to designing the next generation of superconductor units of 1 million kilowatts.

Elektrosila has taken the decision to build a powerful cryogenic base which will please and support even later generations. The Elektrosila leaders and specialists consider that the time is drawing near for industrial reactors for thermonuclear synthesis. These will be units with a unit capacity of several million kilowatts. The sources of their power which create a magnetic field or heat plasma will have a similar pulse power. The windings of these reactors, in being manufactured from superconducting materials, will be able to operate at a temperature of liquid helium. The turbogenerator windings for power sources and for employing the obtained energy will have the same design. Hence, it is essential to move forward to superconductor electrical engineering

on an even wider scale. Here we must now be concerned with the technical base for the machines which will be needed tomorrow and for equipment for super-deep cooling. Otherwise, there will be stagnation and, as a consequence, a defeat on the world market....

This is the strategy. It is not this which makes it possible for Elektrosila each year to take 30-40 models of machines out of production and put completely new ones in their place!

At the enterprise, under the roofs of which metal is turned, stamped and cut, largely due to the director's position, there is a widespread phenomenon which is more often inherent to scientific collectives. This is the phenomenon of group leadership. Precisely this makes it possible for Elektrosila to sensitively pick up on the new, but also to find it itself. Fomin describes this trait as follows:

"Everything that is done at Elektrosila is done by the collective. The subdivision chiefs know the state of affairs on the spot ten times better than I do and they prepare the necessary materials and background studies for taking specific decisions. I should merely weigh everything and assume the responsibility. It is essential to constantly seek advice...."

One of the results of group leadership is the working out of an unique test stand by the association's designers. Its basic purpose is that each new Elektrosila machine be tested not piecemeal and not where it is fated to operate, but rather here, next to the shop from which it emerged and immediately under conditions as close as possible to operating ones. For this reason the operating hours of this stand are particularly coordinated with Lenenergo [Leningrad Power Administration].... Abroad the stand has been judged a "ingenious technical achievement" and prominent specialists from General Electric, having inspected it, have admitted that they would like to test their machines on it as as yet they do not have such a stand....

But from wherever a bold idea arrives, from the general director or from a recent graduate from a PTU [vocational-technical school], it needs a medium in which it can germinate. And above all a psychological medium.

Once in an interview with the Finnish newspaper for professional people KAUPPALEHTI, Fomin was asked the question: "What is your attitude toward enterprising persons?"

"I endeavor to move them into positions which provide greater opportunities and pay more," he replied.

But here Elektrosila makes no concessions in executive or planning discipline. Here it is felt that a truly creative person cannot plead the illusiveness of inspiration. Bold technical ideas and a precise system in managing new equipment, accuracy, neatness in everything and even in appearance (persons going into the director's office straighten their ties and smooth back their hair)--this is the style.

A systems approach permits new ideas, if they are worth something, to be quickly realized. And very quickly. In our times this condition is important for everyone and particularly for such collectives as Elektrosila where products are constantly being renewed and after them the production methods and also the nomenclature.

The position of a leader in scientific and technical progress places many demands. Hence the exceptional importance of correct organization and management of the innovation process, the search for a more advanced organizational structure, the use of specific program management methods and the broadening of computerization.

All of this has made it possible for Elektrosila, starting in 1980, to represent the USSR in an interdisciplinary international project entitled "The Management of Innovations" which is being carried out by the International Institute for Applied Systems Research in Vienna. In the summer of 1981, the representatives of Elektrosila gave a report there. Almost immediately the firm received an invitation to Finland to an international conference on recent directions in the area of improving management. Participating in this conference would be the USSR State Committee for Science and Technology, the Manchester Business School, the firm IBM, Columbia University, the American Management Association and the Hungarian Chamber of Commerce.... Then came a request to review a report on the management of one of the Austrian electrical engineering firms....

It is very important that in the association they understand innovations to be not only technical and organizational innovations, but also useful changes in the sociodomestic sphere and other areas which reflect favorably on the end goals of Elektrosila's operations.

For those in front it is impossible to avoid difficulties and mistakes. They have been, are and should be, just as there always have been abysses and voids where the peaks shine. To maintain the traditions of ongoing progress in a sector from which at present the technical level of a state generally is virtually judged is a particularly difficult question because it requires constant risk. It does happen that ideas and machines on which far-reaching hopes were placed become only experimental ones. It is not only a question of concerns and doubts. It is also essential to make certain that the world of technology, like all our life, is subordinate not only to hopes and, as it seems to us, precise calculations, but also to real nature with all its unfathomable mysteries and surprises. At this moment, the main thing is not to change character.

The start of 1980 was not very promising for Elektrosila. The hopes for one of the major machines were not realized. The failure put some in a funk. The local prophets gloomily joked that new sentences might be expected.... But precisely at that moment the general director returned the customary faith in the abilities of Elektrosila to the collective and clients. He agreed in a fantastically short period of time (3 months) to fill an order for the Ryazan GRES, to make a new modification of a very large turbogenerator with a capacity of 800,000 kilowatts. The unit should differ from its predecessor of equal capacity not only in greater reliability, but also significantly greater capacity reserves.

It was assembled in a record short time with such skill that the basic assemblies of the machine did not require adjustment during starting-up. At the end of 1981, the generator went on line.

Failures in an unceasing search also make sense as a negative result in an experiment is still a result. Traditional technologies are revised and new ones are conceived for superpowerful machines. They help avoid many collisions with the unknown, when a time for new risk comes, when they begin here to manufacture machines with a capacity of 2 million kilowatts and more. And their time, in the opinion of not the hottest heads, is quite close.

In recent years, 40 engineers and workers from Elektrosila have won the Lenin and State Prizes and have become Heroes of Socialist Labor. For a great contribution to the development of Soviet electric machine building science and technology, Boris Ivanovich Fomin in 1981 received a second Order of Lenin and a gold star of the Hero of Socialist Labor.

Leaders!

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VARIOUS FACETS OF MANAGING 'ELEKTROSILA' EXAMINED

Novosibirsk EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 7, Jul 82 (signed to press 26 May 82) pp 12-25

Article by Candidate of Technical Sciences, Hero of Socialist Labor B. I. Fomin, general director of the Leningrad Elektrosila Electrical Machine Building Production Association imeni S. M. Kirov: "Managing the Association--A Continuously Developing Process"]

[Text] Basic Characteristics of the Association

The Leningrad Elektrosila Electrical Engineering Production Association [LPEO] was set up among the first production associations in the nation, along with Svetlana, the Leningrad Optical Equipment and others. For 2 decades we have been improving management, endeavoring to bring it into accord with modern production. This is a rather complicated process and I, like probably my colleagues who are leaders of other production associations, would not be so bold as to assert that the organizational decisions adopted by us or in other places are the solely correct ones.

In my view, there should not be routine or a standard in the organizational structure of an association or in a system for managing a large complex. Many variations are possible. The main thing is that the form (the organizational scheme and methods of management) be sufficiently flexible and mobile and keep up on the rapidly arising changes in production activities as dictated by the high pace of scientific and technical progress and by the growing needs of the national economy.

Before describing the areas of our work in improving management, let me briefly take up certain basic characteristics of the association.

The diversity of product range. The products of Elektrosila are extremely diverse: from very large hydro- and turbogenerators and very complex electrophysical units for controllable thermonuclear synthesis like the Tokamak and Angara to the well-known household electrical appliances. We produce serially turbogenerators with a capacity of 500,000 and 800,000 kilowatts, and in recent years have developed turbogenerators of 1.2 million kilowatts and unique four-pole turbogenerators of a million kilowatts. We manufacture the nation's largest hydrogenerators (at present for the Sayano-Shushenskaya GES), low-voltage equipment and powerful electrical machines for virtually all sectors of the Soviet economy.

The great product diversity determines the complexity of the production structure. In the association are intertwined various types of production from individual and small series (predominant) to series and mass.

Each decade the production volume has increased by 1.5-fold. Each year, we replace 12-15 percent of the products with a rapid increase in their complexity and a wider range of employed materials. At present, the generators with the Elektrosila mark produce more than one-half of the electric power consumed in our nation.

The completeness of the "research--production" cycle. The association's activities encompass all stages of developing the new machines and equipment, from a scientific search for the design ideas to the dispatching of the finished article to the client, supervised installation and operational monitoring at the project.

The diversity and complexity of internal ties. The association consists of a head plant and another three enterprises which differ significantly in scale and are territorially separated: the Reostat [Rheostat] control equipment enterprise in Velikiye Luki, the electrical machine building plant near Leningrad, an affiliate at Dno Station in Pskov Oblast as well as a scientific research and design institute, the scientific and technical center of the firm.

In organizing the association, we carried out basic measures in the area of product, production and functional specialization of the plants. As the tasks have become more complex, this process has undergone further development. If one were to briefly formulate the basic principles in deepening specialization at Elektrosila, then the following must be mentioned:

1) The concentrating of the same types of products at those plants which produce them in the greatest number and have the best production facilities;

2) A maximum concentration of similar technological processes in the aim of their most efficient mechanization and automation;

3) Optimum concentration of the major management functions in the central apparatus;

4) The development of intrafirm cooperation.

An example of product specialization is the concentration of turbo- and hydrogenerator building at the head plant in direct connection with the scientific and technical center and the well-equipped testing facilities. The latter includes one of the world's largest testing stands for turbogenerators which directly in the assembly building fully reproduces the operating conditions of a superpowerful machine at a power plant.

In the area of production methods, with the setting up of the association we succeeded in specializing foundry processes clearly and with a great economic effect, having concentrated all steel casting at the electrical machine building plant near Leningrad and nonferrous casting at the head plant. Stamping

production, the manufacturing of plastic parts and so forth were similarly specialized.

In management, the greatest centralization and concentration have been in technical and economic planning, forecasting, the management of scientific-technical progress and social development, material-technical supply and the introduction of the scientific organization of labor and management. The personnel of the head plant, Elektrosila, is simultaneously the management personnel for the association.

The legal status of the organizations making up the association has been determined proceeding from the role of the production subdivisions and territorial principles. The large Leningrad Electrical Machine Building Plant (LEZ) has been incorporated in the association with the rights of a production unit. The territorially remote Reostat plant (Velikiye Luki) and the scientific research institute which performs a number of tasks for the entire sector have kept the rights of legal entities. The plant at Dno Station in Pskov Oblast has been turned into a specialized preparatory shop of the head plant, but the shop chief has been granted broader rights than the shop leaders at the head plant and in the affiliates, for example, the right to hire and discharge employees.

Each year the association concludes over 2,000 contracts for product deliveries with hundreds of enterprises and projects in power production, the extracting sectors, the chemical industry, shipbuilding, transportation, agriculture and the experimental centers of fundamental and applied science. Hundreds of supplier enterprises provide us with preassembled products and materials, like in other large production complexes.

The rapid broadening of not only the internal, but also external ties of the association. An ever-increasing portion of our products goes for exports, to more than 80 nations of the world. Our generators and large electrical machinery are operating in many nations of Europe, Asia, Africa, South and North America.

The Organizational Structure of Management

The effective functioning of a complicated and dynamic group as is the Elektrosila association is possible only with a flexible and scientifically based management system. Extensive searches for an optimum variation for the organizational mechanism of management have convinced us of the need to create powerful structural blocks which adapt well to external changes and which concentrate all responsibility for exercising management processes relating to the major functions of the association's activities.

The leading blocks in the organizational structure are: the scientific-technical center with experimental production and developed testing facilities; the production block with a staff department coordinating internal firm production specialization and cooperation; the blocks of technical production preparation, infrastructure, commercial, economic and personnel as well as the blocks for social development, reconstruction and capital construction.

In managing such an association as Elektrosila, it is essential to combine the linear-functional and specific-program management structures. An example of such a combination is the integrated system used in the association for managing technical progress. The system as a specific program encompasses all the services and subdivisions which influence the technical parameters, reliability and quality of the product, regardless of their linear subordination. Its action is extended to all stages of the actual performance of the work: from conducting scientific research and designing, technical preparations for production and manufacturing the product up to complete testing, supervised installation and operational monitoring of the machines.

The comprehensive system for managing technical progress is based upon the principle of across-the-board planning and management for the entire cycle of developing new equipment. It has a mechanism for specific incentives rigidly tied to the end results of the new developments. A detailed description of the system and the results of its work have been given in the article by the chief engineer of the LPEO, Yu. V. Aroshidze.

The comprehensive system for managing technical progress is not the only specific system complementing the organizational structure of the association. Operating analogously are the system for the technical preparation of production using a computer, the system for the centralized delivery of materials from warehouses to the shops as well as the program structures in the scientific and technical center.

In keeping with the appearance of new and the further complicating of the tasks confronting the association, the structure of the leading management elements of the association, like its entire organizational mechanism, has been revised. For precisely this reason, I would like to emphasize the need for greater flexibility in the structure of large associations and greater independence for their leaders in taking organizational decisions.

A characteristic example of reorganization is, in particular, the creation of the current scientific and technical center of the firm. This leading unit which determines the pace of technical progress in the association was initially represented by a group of interrelated design departments and applied research laboratories directly within the structure of the central management apparatus.

Since the USSR converted to implementing the world's largest comprehensive programs for tapping the hydropower resources existing in the nation and to developing nuclear power, a new approach was required to organizing research and designing. On the basis of the association's design departments, an independent scientific research and design institute was organized, with a stronger system for planning and financing scientific research and with broader powers. Because of this it became possible to have better organization, technical and laboratory equipping for research and development and the hiring of high-skill scientists and designers for the firm.

The dynamism of electrical engineering and the greater complexity of its goals and tasks at the end of the 1970's, in line with the creation of a program for

saving fuel and energy resources, raised a number of new problems requiring the intensification of the "science--production" cycle. In accord with this the structure of the scientific-technical center was reorganized. The leaders of the technical units received substantially greater opportunities for influencing production. At the same time their responsibility was increased for the end results of the association's operations and a number of administrative functions which impeded the work of scientific and technical personnel were turned over to the LPEO central management apparatus.

The Integration of Management on a Basis of an Automated Management System

The organization of management at the LPEO is based upon extensive computerization of management work. The efforts of specialists in the area of automating management are aimed at supporting engineer and management decisions, deepening analysis of the course of production and broadening the sphere where mathematical economics methods were employed in management. At Elektrosila a number of major functional subsystems have been set up and these are interrelated and employ a common data base. The central of these is the order management system which we have worked out. Obviously, it could be of interest for many machine building enterprises.

The management of orders, that is, the succession of work, permeates the entire process of managing an industrial association with individual and small-series types of production. In contrast with production having a large-series fund, in small-series and individual production, the sequence of work cannot be optimized once and then employed over several plan periods, since even in 2 quarters there is not the same range of articles, let alone in a year.

The tasks of selecting the plan variation and managing the load factor of the subdivisions and the level of incomplete production, the tasks of managing supply, production and marketing--all of these are based upon the managing of the sequence of work in such an association as ours. The order management system considers these particular features. It provides for five structural blocks:

1) The long-range management of the association;

2) The management of development and the accumulating of data on the articles to be produced and the production methods to be employed;

3) Operational management over the filling of the orders (from research and development to the delivery of the articles to the clients);

4) The management of supply;

5) The management of deliveries and marketing.

The central block which unites the system is the "Operational Management of Filling the Orders." It formulates the normed network schedules which regulate the sequence and duration of the work stages in manufacturing the articles in the shops. The calculating of the schedules is carried out with the aid of a computer as an iteration man-machine procedure.

The stages of research and development and the technical preparation of production (the "Development Management" block), the supply of materials and preassembled articles (the "Supply Control" block) as well as the stages related to the delivery and marketing of the finished products (the "Delivery Control" block) are also connected to the obtained production cycle network schedules. Thus, all four operational blocks should operate according to unified complete stage-by-stage order-filling schedules. The accounting of order filling has also been organized on the same complete principle.

The guaranteed observance of contractual discipline is noo less important for the association's authority than the precise production organization, high quality and reliability of the products. For this reason the "Delivery Control" block has been incorporated among the main block's of the system.

The data on the complete accounting for the filling of orders, in having a feedback nature, is to be employed not only for the operational control for the course of production, but also in the "Long-Range Association Management" block. On the basis of these the association's leaders will select the most applicable variations of an order portfolio and production programs and these will then be turned over to the computer for calculating the calendar work schedules of the subdivision.

The creation of an integrated management system for the association on the basis of computers is viewed by us as a continuously developing process. It can be successfully carried out only with an interest in it on the part of the higher leadership. For this reason we have organized a coordinating council for the development and introduction of the ASU [Automated Management or Control System]. This council meets once a quarter under the chairmanship of the association's general director. Its permanent members are the deputy general directors for the basic areas of the association's operations and the leaders of the subdivisions responsible for systems research, data processing and programming. When necessary, leaders and specialists who are not permanent members can be involved in the work of a regular meeting of the coordinating council.

After the coordinating council approves a certain area of development (for example, the man-machine forming of the current, long-term and prospective plans for turning out finished articles), the responsibility for the practical organizing of work in this area is entrusted to one of the deputy general directors, to the one to whose functions this area is related. In the subdivisions involved in the designated area of management automation, leaders are appointed responsible for introduction and they become the deputy subdivision chiefs. During the period of introduction they functionally are under the deputy general director responsible for the entire area as a whole.

The specific program approach makes it possible for the coordinating council to keep an eye on all the main areas of developing management integration and automation. Here the organizational structure is not further complicated and purely research or purely introductory brigades assigned from the general management of the firm are also not created.

The computer in the association is widely employed not only for the automating of management, but also in research and design work. In this regard, it was essential to have stronger software and an increase in the amount of hardware. Our specialists are working on a solution to the problem together with highly skilled collectives from the USSR Academy of Sciences. Along with the Leningrad Scientific Research Computer Center of the USSR Academy of Sciences we have drawn up and are implementing a program aimed at connecting the computer facilities of the Northwestern Territorial Association of Enterprises in the Electrical Engineering Industry into the information computer network of the Leningrad academy institutions. The incorporating of Elektrosila in this network is essential primarily for the development and coordinating of work in the area of nuclear power, for units researching thermonuclear synthesis and for generators employing the superconductivity effect.

The Management of Social Development

Recently, in the association's management, there has been a noticeably larger role of the decisions taken in the area of social development. This is the 4th Five-Year Plan which we have been drawing up a plan for the firm's economic and social development. It correlates the socioproduction needs of the labor collective and the financing sources: the funds formed from deductions out of association profits and the centralized allocations provided in the state plan for satisfying socioproduction needs.

Operational leadership over the carrying out of social measures is provided by a structural block under the assistant general director for employee services and works in close contact with the trade union leadership. Its duties include the organizing and coordinating of work in the area of developing and maintaining the diverse social service infrastructure of the firm in good order.

The scientific soundness of the social development plan is ensured by the carry-out of sociological research. This research has a concrete, applied nature. Its goals are: in the first place, to create an analytical basis for sound planning of the collective's economic and social development; secondly, to ensure up-to-date social information needed for taking current and long-range management decisions on such urgent and timely questions for the association as realizing reserves for increasing labor productivity and the shift factor for equipment operation, improving norm-setting and labor incentives, stabilizing of the personnel and others. This is described in greater detail in the article by A. I. Marach and Yu. V. Konovalov.

The Sectorial and Territorial Aspects of Management

The production association, being the basic element in the unified national economic system for the planning and management of industrial production, cannot be viewed in isolation and outside of its departmental and regional ties.

In a speech at the November (1981) Plenum of the CPSU Central Committee, Comrade L. I. Brezhnev emphasized: "...We rightly speak about the new demands which are raised by the present development stage of the national economy. But, unfortunately, the style of economic activities and economic thinking, the

planning methods and the management system are not being reorganized with sufficient energy."

The increased responsibility of the large associations, in being very noticeable in recent years, has almost not been accompanied by a decline in the superfluous and at times frankly petty interference. For an extended time, conditions have not been created for a real broadening of the limits of economic maneuvering.

Practice shows that very frequently the middle level of the sector's management apparatus is unable to understand the particular features and difficulties of modern production which is rapidly becoming more complex. In order to make up the lack of concrete information needed for sound management, various levels utilize average indicators where they are inapplicable. For example, in assessing certain (often secondary) aspects of enterprise operations, large complexes with individual, rapidly changing production, a high share of exports and very crucial new technology are put on the same footing as enterprises with a stable range of mass production and a score less number of suppliers and problems. As a rule, an individual and frequently not basic indicator is examined. The end results here are consciously not compared, since they, if correctly approached, always are in favor of the large production associations. As a consequence of such an evaluation method, both the collective and the sector lose out, much effort and money is wasted for the sake of an indicator and not for achieving a better end result from operations as a whole.

We actively support the ministry's proposal for creating in the USSR Northwest a territorial-sectorial council for the directors of the electrical engineering associations, plants and scientific research institutes. Definite results have also been achieved in seeking out and implementing the sector's reserves in the region (the possibilities and problems of the territorial-sectorial director councils have been taken up in detail in one of the previous issues of EKO).

It cannot be said that the sector and the territorial bodies do not show an interest in the work of our council. However, in the ministry and in the region there have been few concrete organizational steps which conform to the content and goals of this work. As a result of organizational problems (the shortcomings of "form") several comprehensive programs meriting attention (for example, for broadening regional cooperation among the electrical engineering enterprises of the USSR Northwest in producing tools, metal pieces and so forth) have not made headway in the national economic plan.

In order to remove departmental barriers which arise under the conditions of the sectorial management of industry, it is essential to resolve many theoretical and practical problems, in particular, more thoroughly study and develop the methods of specific program planning as well as study and draw correct conclusions from the already-existing experience of interdepartmental cooperation. For example, the experience of 28 Leningrad enterprises and organizations from different departments which are cooperating directly in building the Sayano-Shushenskaya GES, the practice of forming territorial-production complexes and so forth.

Even now, we can and must speak about an urgent need for changing the capital investment planning procedure adopted in a majority of ministries. In today's plans they, as a rule, are oriented at the development of an individual enterprise or association and its social-service sphere. At the same time, it would undoubtedly be more effective to plan a certain portion of capital investments considering the development of a group of territorially close enterprises in one sector. In this instance, good opportunities would be created for setting up large specialized and hence well-equipped auxiliary and preparatory production which would be the same for the group of kindred enterprises in the region.

An even greater effect can be achieved by territorial-sectorial integration in the social-service sphere, for example, the pooling of funds from related enterprises in a region for setting up medical and health centers, sanitoriums, children's institutions, preventoria and PTU.

A close unity of goals and means, rights and responsibilities, methods and real opportunities of management should also be provided in organizational structures which are external to the associations.

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BENEFITS OF UNIFIED TECHNICAL POLICY IN 'ELEKTROSILA' ASSOCIATION VIEWED

Novosibirsk EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 7, Jul 82 (signed to press 26 May 82) pp 26-35

[Article by Candidate of Technical Sciences Yu. V. Aroshidze, chief engineer: "The Staff for Technical Progress"]

[Text] In order to illustrate the nature and pace of technical progress achieved by the Elektrosila LPEO [Leningrad Electrical Engineering Production Association], most frequently and with full justification we mention the parameters of the articles being produced by us: the serially-produced 800,000 kilovolt turbogenerators or, as we call them, the "eight-hundred-thousands" or the "millionaires" for nuclear power plants, the world's largest hydrogenerators for the Sayano-Shushenskaya GES with a unit capacity of 640,000 kilowatts and so forth.

The creation of superpowerful generators provides a good savings for the national economy. A turbogenerator of 500,000 kilowatts of capacity, in comparison with a generator of 200,000-300,000 kilowatts, makes it possible to save 7-8 million kilowatt hours of electric power a year, since the share of energy losses drops with an increase in unit capacity. Moreover, at the GRES equipped with such generators, there is a sharp decline in fuel consumption per kilowatt hour of generated energy, expenditures on capital construction, transportation and so forth are also reduced.

The improvement in the produced equipment can also be seen from the lower material and labor expenditures per kilowatt of capacity. When the Bratsk GES was being built, the electric power workers equipped it with hydrogenerators in which each kilowatt required 5.9 kg of materials, while in the generators for the Sayano-Shushenskaya GES, only 2.9 kg is required per kilowatt. During the 10th Five-Year Plan, the association increased the capacity of the machinery being produced by more than 20 percent, without increasing the consumption of rolled metals or the number of employees.

The economic effect from the Elektrosila products employed in the national economy during the 10th Five-Year Plan exceeded by 10 percent the total effect obtained during the years of the 8th and 9th Five-Year Plans.

In working constantly to improve the management of technical progress in the association, we have set several interrelated tasks for ourselves. The basic

one is to maximally concentrate the design and research units on developing high quality designs for technically advanced, dependable and competitive machinery and equipment. For this, we are endeavoring, in the first place, to maximally centralize the specialized functions such as patenting and licensing work, technical information, standardization and unification and metrological support. Control over these aspects of scientific and technical activities on an association-wide scale to a significant degree has already been concentrated in the head departments.

Secondly, in investigating the reserves of the organizational structure, we are undertaking measures to the degree that this is possible to free the research and development leaders of administrative functions not inherent to them. It is well known how much precious time is spent by the scientific leaders of independent scientific research institutes on solving administrative problems (for capital coonstruction, material-technical supply, the organizing of transport and warehouses and so forth), on examining questions of current planning, the organizing of wages, personnel, bookkeeping, repair support and so forth. Within a large production complex, the solution is suggested by life itself: many common problems of administrative management for scientific-technical activities, depending upon the status of the scientific research institutes within the association, to a significant degree can be concentreated in the corresponding elements of the central management staff. The advisability of this is confirmed by practice.

The development of a scientific research institute into a scientific-technical center on the basis of those principles realized in our association contributes to the integration of science and production. The scientists and specialists from the scientific research institute constantly provide developer supervision over the introduction of their work at the association's plants and take a most direct part in the development of new equipment and the final adjustment of prototypes at the consumer enterprises. In turn, the production services do a great deal to create mock-ups, experimental and full-scale models essential to the scientific research institute for its developments and provide all the necessary stand testing equipment for research. This strengthens and broadens the experimental capabilities of the scientific research institute.

In the association and scientific research institute, it has been possible to concentrate a significant scientific potential with 80 doctors and candidates of sciences employed in various positions in the institute, in production and on the management staff.

Thirdly and lastly, we have found a solution to the problem of a "staff" for managing technical progress within the association's structure. The first stage in creating a staff service was the organizing of a centralized scientific-technical department which brought together the previously independent scientific-technical departments, the institute and the head plant. The second stage was the reorganizing of this into a comprehensive Department for Control of Quality and New Equipment (OUKNT).

Concentrated in this department which is directly under the association's chief engineer are virtually all staff functions involved in the management of technical progress. These are:

1) Planning and supervision of the development of new equipment;

2) Quality and reliability control of the machines and equipment;

3) The organizing of the process of state certification for the association's product;

4) Resolving the questions of scientific and technical cooperation between the Elektrosila LPEO and kindred foreign firms.

Responsibility for the forming and supervision of execution of the summary technical progress plan for all areas is split between the OUKNT and the other staff department of the technical unit, the Department for Technical Preparation and Specialization of Production. The OUKNT is responsible for those sections of the plan which concern progress in the sphere of research, designing and the development of new articles, while the department for technical preparation supervises the areas devoted to organizational and technical progress directly in production, in the sections and work areas.

The technical progress plan for such a large production association as the Elektrosila LPEO objectively has a complex inner structure and in light of the present-day tasks such a dividing of the staff functions is seen by us as optimum.

In addition to the linear structure for the management of development, we also rather widely use specific program planning and management in developing particularly complex or unique machines and equipment. The leaders of such programs (in individual instances they can be, for example, the chief designers for certain types of products) are delegated significant powers and not only in the sphere of managing the development, but also in the area of the preparation of production, manufacturing, testing and supervised installation of the machinery.

An example of another form of specific program management in scientific-technical and production spheres, when the aim of the program is not to develop a specific article, but to solve an interdisciplinary problem, is the employed comprehensive product quality control system (KS UKP). This is a component part of subsystem in the general mechanism for managing technical progress in the association.

The KS UKP is based upon a range of enterprise standards which take into account the requirements of state product certification, the parameters of the best foreign analogues and the prospective demands on our product deriving from the long-range national economic development plans. Within this system the following is carried out: coordination and planning of work in improving quality, a range of organizational and technical measures to ensure a high level of technology, metrological control and the organization of work areas.

In speaking about the management of scientific and technical progress in the association, we cannot help but mention its link with the line of management which is external to the association, that is, the sector-wide system of planning and managing new technology. This coordination is carried out through a

unified sector-wide plan for the development of science and technology formulated by the chief technical administration of the USSR Ministry of Electrical Equipment Industry. The experience of the sector in this area has been mentioned in the Decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979 and has been recommended for extensive dissemination throughout industry.

The unified plan for the development of science and technology in the sector links all stages of the "research--production" cycle and not broken down for the enterprises and organizations, but rather for the major problems and products. In this manner the principle of across-the-board planning is realized and here all parts of the plan are coordinated in terms of dates, resources and specific executors of the individual stages. Each executor receives a planning "schedule-order" document and this has the force of an economic contract.

The Elektrosila Association is the head one in terms of the priority comprehensive scientific-technical programs in the sector (large capacity hydro- and turbogenerators, including for nuclear power plants, large electrical machines and so forth). Extensive experience has been acquired in a system of across-the-board planning of new developments. This experience convinces us that a system of across-the-board planning through schedule orders makes it possible to concentrate the financial and material resources on the truly major areas of technical progress, to eliminate unjustified duplication, to promptly halt unpromising and ineffective projects as well as exercise control over the time and quality of carrying out the work.

Economic incentives for the creation, development and introduction of new equipment at present have been linked to the end result, that is, to the industrial output of the product. This has been placed directly dependent upon the technical and economic level of the developed product.

The material incentive fund for the creation, development and use of new equipment is formed from three sources:

1) Deductions from the additional profit provided for as incentive surpayments on the wholesale prices for new product types with the Quality Mark;

2) Deductions from profit obtained from an actual decline in product costs achieved as a result of the use of new scientific, technical and organizational ideas both in the designing of the products as well as in production methods;

3) The funds to be included in individual instances in the cost of scientific research and design work for developing systems and installations of electrical engineering equipment as well as individual types of products the economic effectiveness of which cannot be established.

One of the instruments for an economically effective solution to scientific and technical problems in the association is the method of functional and cost analysis (FSA). A special subdivision organized within the scientific and technical center, the FSA group, is concerned with its introduction.

As is known, FSA makes it possible to have a systems study of expenditures on the products and to disclose and minimize those sizeable expenditures which are not directly related to its functional purpose, but rather are due to the imperfection of the design, production methods, the methods of machining and assembling or the organization of the labor process.

The FSA of the objects being designed or produced is carried out by the forces of temporarily organized work groups which include experienced designers and production engineers, an economist and an expert from the specialized FSA group. All together, they make a detailed analysis of the functions of the product and the structure of its costs. From the analysis data new technical and organizational decisions are sought which would reduce the expenditures where they are not based upon direct or indirect functional expediency. World experience is also employed in organizing FSA.

Even the first experimental analysis of just one of the products of low voltage equipment, a serially produced switch, has fully confirmed the comprehensive merits of FSA as a tool for increasing the economic effectiveness of new equipment. The temporary work group has formulated around 50 measures aimed at reducing the material and labor intensiveness of an article, at improving its quality parameters and production conditions as well as reducing rejects and damage. The annual effect, considering the serial production of the switches, was 250,000 rubles with a reduction in the labor intensiveness of the article by 68,000 norm hours and the saving of a large amount of silver required in the design.

The improved management of technical progress at a modern enterprise cannot be conceived without the automating of research and design calculations. In 1976, Elektrosila began to develop a comprehensive system for automatic designing (SAPR) encompassing all stages of the designing of turbo- and hydrogenerators as well as large AC and DC equipment. In 1980, the first stage of the system was put into industrial operation. Its completion ensured the rapid growth of the amount of design operations performed on a computer.

In the association's scientific research institute a SAPR department has been set up with services for technical, information-procedural and program support. We have succeeded in finding a very effective form of linking the users with the computer center. In each design department, a group of specialists has been assigned for converting the work to a computer. The engineers of these groups have been trained in the SAPR department. They determine the assemblies and pieces which should be converted to automatic designing, they prepare the data base and feed the computer data into the bank. A specialist in applied program support has been assigned to each group of the SAPR department.

The broadened workfront in the area of SAPR has necessitated the creation of a new functional management structure of the matrix type superimposed on the linear management structure of the association. The horizontal ties in this system are coordinated by the main designers of certain product types. The vertical ties are coordinated by specialists in the types of SAPR support (for hardware and software and for the data bases).

The department for the development of SAPR which is a staff unit in the automatic designing system is functionally subordinate to the superior management element of the association (the chief engineer). The capital investments into SAPR are coordinated with the overall demand of the association for automation facilities for all elements of the "designing--production" cycle.

The conversion to automated designing will provide a significant savings achieved by shortening the designing time, reducing the material intensiveness of the articles, employing standardized parts, reducing losses from defects in the technical specifications and accelerating production preparation.

In the area of research and development, there is not only a basic but also an unique auxiliary sphere of activity. If it does not have a rational organization, it can negatively influence the end result, as miscalculations in the manufacturing method or the designing of the articles. One such problem at the Elektrosila LPEO is the organizing of work with technical specifications. Suffice it to say that the number of design and production documents handled each year in the association exceeds 600,000 units. Almost 3-fold more blueprints and flow processes (1.7 million units) in accord with the production requirements are kept in the technical archives. We are introducing the microfilming of technical documents for rationalizing the handling and storage of such a mass of documents.

It is interesting to note that in this area the search for design ideas has been substantially eased by socialist integration of related enterprises within CEMA. As the basis of an organizational plan worked out by the group for the organization of management under the association's Department for NOTiU [scientific organization of labor and management] we have been able to use the already developed experience of the Czechoslovak CKD Firm (Prague) which is the recognized leader in the CEMA nations in this area.

One of the important components in the management of technical progress is the organizing of the association's testing facilities. Previously a generator was tested under a full load only at the power project. With the conversion to producing larger machines, stoppages could increase sharply due to the labor intensiveness and complexity of final adjustments on powerful generators away from the production areas. For this reason, during the years of the 9th and 10th Five - Year Plans, the association developed one of the world's largest generator testing stands.

At present, we can provide a full testing program for equipment of increasing unit capacity, maximum mechanization and automation of the testing and dependable recording of the obtained data for subsequent analysis in the scientific and design subdivisions. The times for the final adjusting of superpowerful equipment have been shortened and the association's scientific center has obtained enormous opportunities to improve the organization of research.

During the years of the 10th Five-Year Plan, the association has developed the production of 75 types of new products. The proportional amount of new equipment in the total volume of commodity product reached 28 percent in the final year of the five-year plan. At the same time, 213 types of obsolete articles were taken out of production. The economic effect obtained in the national

economy from the introduction of the association's new articles over the 5 years was 155 million rubles.

In the 11th and 12th Five-Year Plans the association has outlined a major program of work in improving and developing the nation's power base. One of the basic developments aimed at increasing the savings of material, labor and energy resources is a single standardized series of turbogenerators developed with the involvement of related enterprises and associations. The series encompasses a capacity range from 63,000 to 800,000 kilowatts. It should replace all types of turbogenerators produced at the various plants of the nation under different design specifications and production methods.

The new series of turbogenerators differ from the previously produced ones in lower specific materials consumption (material intensiveness has been reduced by an average of 15 percent), by smaller sizes and higher operational indicators. The association has already manufactured four new units of this series with a unit capacity of 160,000 kilowatts each for the TETs of the Urals and Siberia. Equipment with a capacity of 1 million and 1.6 million kilowatts will be the continuation of this series. The prototype of the "millionaire" is to be produced in the 11th Five-Year Plan.

One of the major projects during this five-year plan will be the manufacturing of the prototype of a 300,000-kilowatt turbogenerator using the superconductivity phenomenon. This unit will weigh one-half the amount than a conventional turbogenerator.

For the further development of nuclear power, there are plans to develop turbogenerators with a capacity of 1.5 and 2 million kilowatts at 1,500 rpm (the effect from the introduction of one generator will be over a million rubles).

In developing the production of generators for producing electric power by traditional methods, the association is simultaneously continuing to develop fundamentally new units based upon the use of plasma and thermonuclear synthesis. This area is an important and promising one in solving the problem of further developing the nation's fuel and power complex. The total economic effect from introducing the range of scientific and technical developments and modern types of equipment during the 11th Five-Year Plan should be 185 million rubles.

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PLANNING, IMPLEMENTATION OF SCIENTIFIC LABOR, MANAGEMENT METHODS AT ELEKTROSILA

Novosibirsk EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 7, Jul 82 (signed to press 26 May 82) pp 35-45

[Article by A. I. Marach, chief of the Department for the Scientific Organization of Labor and Management and Yu. V. Konovalov, deputy chief of the Department for the Scientific Organization of Labor and Management: "The Department for the Scientific Organization of Labor and Management--Not an Advisor but Rather an Organizer"]

[Text] A Major Resource for Efficiency

The scientific organization of labor and management [NOTiU] in our association is viewed among the major organizational resources for increasing production efficiency. This has also determined the systems approach to the problem. The NOTiU Department is directly under the general director and this ensures an orientation to solving the most urgent tasks for the association. The chosen structure for the department makes it possible to comprehensively solve the problems of organizing labor and management. Here the department is responsible for working out organizational decisions, but also for implementing them.

With the different subordination of the NOTiU services which is still rather widely found at the enterprises, these services, in the first place, operate under conditions of intentionally limited opportunities and secondly cannot avoid a one-sided orientation depending upon in what department the service is, that is, the chief engineer, the deputy director for economics, the department for the organization of labor and wages or any other.

Let us take a characteristic example. When our department in close contact with the technical and commercial services was involved in working out and introducing a system for centralized delivery of materials from the warehouses to the shops, the warehouse and transport systems (the commercial function) had to be centralized, the space of the central warehouse and the numerous yards for unloading materials in the shops had to be radically technically reequipped (the function of the chief engineer), certain changes had to be made in internal production paperwork (the area of responsibility of the deputy general director for production) and the system of wages and material incentives for labor had to be somewhat altered (the economics area). Finally, we had to

alter the association's organizational structure, introducing in it a central preparatory warehouse shop in the place of the individual warehouses which were under the departments for material-technical supply, external cooperative deliveries, the chief mechanic, capital construction and the tool system (the level of the general director). This undoubtedly beneficial measure freed over 15 units of transport, 25 employees and completely excluded stoppages in the shops while waiting for materials. The coordination of such work (it was carried out by our department responsible for the organizational plan as a whole) could be carried out only under the direct leadership of the association's general director. No other line of command for the NOTiU Department, as is clearly seen from the above-given detailing of the tasks, could have led to the success of the measure, but rather would have excluded the very idea of carrying it out.

Incidentally, in the correct subordination of the NOT [scientific organization of labor] services (to the enterprise director) lies also the solely correct solution to the major problem of their work, that is, ensuring an affiliation and creative support from the production, economic and most importantly technical services of the enterprises.

Incidentally, the relationships of specialists in the area of management and NOT at certain enterprises are complicated by the fact that the NOT workers are involved in assessing measures in introducing new equipment, progressive production methods and the reconstruction of shops after the work has been carried out. But this must be done during the stage of the design decisions, when it is still not too late (and not so expensive) to adopt measures to ensure a rational labor process at the reequipped or reorganized section. We also did not avoid certain complications and drew the firm conclusion for ourselves that the analysis should be made before the plans were carried out.

"For successful management," said V. I. Lenin, "in addition to the ability to persuade...it is essential to have the ability for practical organization. This is the most difficult task as it is a question of reorganizing the most profound, economic, bases of life...."[1]

A specialist in management and NOT of course should also be an organizer for implementing his innovations. In following this principle, the department's specialists work to establish the rational organizational structures worked out by them, they set out an effective arrangement and specialization of the reorganized areas and organize the acquisition of the required office equipment and supplies, mechanized and automated transport and warehousing equipment, packaging and even the basic equipment for the shops.

The new management procedures or methods are made compulsory in the form of enterprise instructions, regulations or standards and training is provided in the new labor procedures and methods. The most complex systems (for example, the computerized system for monitoring execution which has been developed and

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[1] V. I. Lenin, PSS [Complete Collected Works], Vol 36, p 173.

introduced) are maintained in operation by the forces of the department's operators. All of this is difficult, often routine labor not inherent to "pure" developers, but if we neglect this the work of improving labor and management will be canceled out.

Our department has three basic elements: the bureau for the organization of management, the bureau for planning and introducing NOT in the shops and a group for social psychological research.

The Bureau for the Organization of Management is in charge of all analytical and organizational-procedural work involved in improving the organizational structure of the association's management. Annually we introduce an average of 20 progressive changes reflecting the objective needs of developing production and the requirements of technical progress. The task of the bureau is to promptly detect arising problems, to make an effective analysis of them, and to find and propose alternatives for solving them to the association's leadership. After a decision has been taken to alter the organizational structure, the specialists from the bureau prepare and coordinate the drafts of the necessary orders and instructional-procedural documents which regulate the operation of the newly introduced or reorganized subdivisions and they supervise and ensure the practical working up and introduction of the new organizational scheme.

In operating associations, with reorganizations and changes in the structural schemes, a need arises to clarify the functions of the services and departments and regulate the relationships between the central management apparatus and the affiliate plants. For this reason, the bureau provides a more detailed regulation of the functions than in the organizational plan and it works out and adjusts the regulations governing the structural subdivisions, the job instructions and the management organizational standards. At present, there are 30 such standards in effect at the association. All these documents reinforce the new methods for carrying out management procedures. For the same purpose the bureau in the necessary instances also works out and introduces management systems for individual functions and improves the paperwork.

Of the studies in this area, the following are of interest:

1) A computerized system for monitoring the execution of external and internal executive documents. The scope of its effective control is up to 90,000 items a year employing four workers from the supervisory inspectorate;

2) A circular correspondence delivery system. This has replaced 30 regular messengers and has basically freed the engineers, technicians and white collar personnel of the need to daily spend useful time on the delivery, transmission, signing and receipt of thousands of diverse documents and drawing;

3) A system of information support for scientific-technical and administrative-managements units.

A rational management system, like any technical process, requires certain means and conditions for realizing it. For this reason, the bureau has assumed concern for providing these, including: the selection and acquisition of

modern office equipment and comfortable furniture considering the particular features of the work done by representatives of various professions in the engineer and managerial personnel, the acquisition and installation of intercom systems and copying equipment.

The second bureau of our department is the Bureau for Planning and Introducing NOT in the Shops. The starting point for the activities of this bureau is a rational organization of the work areas and then rationalizing the labor process on a shop scale, intershop relations and the plant infrastructure.

All measures related to a comprehensive improvement in the organization of labor in a shop, as a rule, are correlated into a single organizational plan created by the bureau and a special order of the general director is issued for introducing this. The intershop developments are carried out in an analogous manner.

The organizational plan provides for the organizing of the work areas, internal shop specialization and centralized production supply, the improving of the layout of the shop areas and the structure of their management, a rational organization for internal shop transport and the warehouses, the improving of paperwork and the communications systems. The bureau assumes responsibility for the complete equipping of the work areas, that is, the acquisition of modern office equipment for the designing of this by the in-house design group which includes a designer.

With the aid of the technical and commercial services we have been able to supply the production sections with tool cabinets with central turning and sliding shelves and due to this there has been a tripling of the efficiency of the inner volume of the cabinet. We have also supplied modern work benches, internal shop transport for transitions between operations, standardized, convenient-to-use plastic crating, multitiered mechanized warehouses for storing parts and pieces and so forth.

By the start of the 11th Five-Year Plan the association's plants had organized more than 20 shops and sections conforming to the basic NOT demands made on exemplary subdivisions. Among them were the major producing shops (turbogenerator, equipment, the assembly shop for electrophysical equipment and others), the auxiliary shops (tool and nonstandard equipment) and even the shops and sections with traditionally bad working conditions, for example, the shop for producing plastic pieces, the galvanized plating section, the nonferrous metals casting shop and the insulating-winding shop.

The motives of human conduct on the job, the degree of satisfaction with a job, the psychological microclimate in the primary labor collectives are now assuming almost the same significance as the growth factors in labor productivity such as its technical equipping and level of organization. Responsibility for organizational and procedural support for the association's work in this area has been entrusted to the third group of our department, the Group for Social Psychological Research.

Our sociologists have elaborated a method and organizational aspects of various applied research, the results of which, in particular, make it possible to

establish the collective opinion of the workers themselves on the whereabouts of reserves for increasing labor productivity (for example, by expanding the sphere of employing the brigade forms of labor); assessing the degree of job satisfaction in the various labor collectives (at a section, in a shop, at a plant as a whole or for various vocational-age groups. Such research has been carried out among the machine tool operators, the working youth and the shift foremen) and to ascertain the factors reducing this satisfaction and creating the prerequisites for potential personnel turnover.

Starting in 1972, the sociologists have been working on evaluating the job and personal qualities of the specialists and leaders. Taken into account are the vocational and general erudition, the ability to unite the collective around a common goal, authority and so forth. The results of evaluation provide an opportunity to soundly control the forming of a reserve for promotion and to more accurately focus the measures in the area of improving the skills of the management, engineers and technicians. These estimates are employed in awarding the titles "master first-class" and "master second-class" giving the right for an increased salary.

Quite recently, the department has organized a new subdivision and this is a promising Laboratory for the Elaboration and Introduction of Systems and Methods for the Scientific Organization of Production. Its primary goal is to realize in production and maintain in operation an across-the-board system of order control. This is the first time that such a system which is computer oriented has been worked out in our nation. We are placing great hopes on it.

In 1975, Elektrosila became a winner of the First Prize in the All-Union Competition for the Better Scientific Organization of Labor and Management held by the AUCCTU. In subsequent years, over 30 of the association's development in the area of NOTiU have received 70 awards and diplomas of the VDNKh [Exhibition of National Economic Achievements]. This is all well and good, but not the basic thing for us. The main thing is that in the association due to the technical and organizational resources put into action by the NOTiU Department, labor productivity has been growing stably and personnel turnover declining.

Over the last decade at the leading Elektrosila plants, personnel turnover has declined by 1.5-fold and stabilized on a level of 9-12 percent a year. This is natural and in a certain sense necessary for such complex production.

It must be pointed out that great attention is paid to organizational progress in the sector not only by our Elektrosila, but also by the Novocherkassk Electric Locomotive Building Plant, the Kiev Relay and Automation Plant, the Zaporozhtransformator [Zaporozhye Transformer] Association and, in particular, at the Vilnius El'fa Production Association, where, in our view, interesting experience has been acquired and awaits evaluation in the area of comprehensive organizational planning for rational labor processes in series production.

If the Problem is Viewed More Widely

As a whole for the nation, the organizational factors, among which the improvement of management and the comprehensive introduction of NOT play a particularly noticeable role, provide around one-fifth of the annually achieved increase in labor productivity.

NOT activities have exceptionally strong guarantees for further good prospects. These have been set down in Article 21 of the USSR Constitution which proclaims: "The state is concerned with improving working conditions and labor safety and the scientific organization of labor...."

Yet can it be asserted that all the reserves found in NOT and the improvement of production management have been realized? We feel that this is not the case. At many enterprises and sometimes also at associations, the NOTiU services still must perform two functions: their basic job and self-defense. Here the latter, the struggle for survival, even prevails since the NOTiU service can operate actively only when it is recognized and receives support. Here it is not merely a question that among the production leaders there are still persons resistant to change. The problem is that the creation of a scientifically sound system for introducing the scientific organization of labor and management has not been completed on a broader scale.

It must be recognized that in the area of NOTiU a nonsystematic approach still prevails. Responsibility for the problem rests with the USSR Goskomtrud [State Committee for Labor and Social Problems]. Naturally, its focus is on those questions which are directly tied to the sphere of its activities, namely: improving the organization and servicing of work areas, improving the division and cooperation of labor.

But the work areas, even those excellently organized and continuously supplied with everything essential, are an important, but, of course, not the sole area of an enterprise's production organism. There is no need to prove that the ultimate success of a production collective, including the output achieved at the work areas, is equally dependent upon the rational organization of production and management at the enterprise. This includes also a dependence upon the organization of intraplant transport, the correct organization of the warehousing system, the systems of operational planning, internal plant paperwork and many other well known and important factors which go far beyond the limits of the problem of organizing and norming labor at an individual work area or section. However, none of the listed or similar factors would fall in the list of the NOT areas planned by the Goskomtrud or could scarcely fall in it, as it is not within the competence of this state committee or does not conform to its organizational, procedural and technical possibilities. The possibilities of the Goskomtrud are limited even in solving the problem of the rational organization of work areas and it is particularly seriously concerned with this.

In order to systematically solve the problem of the scientific organization of labor and management as the scale and pace of development in today's industrial production require, the following are essential:

1) Good standard plans for organizing work areas for various worker professions (the procedural aspect of the problem);

2) A stable, preferably territorial-sectorial, network of well equipped specialized enterprises involved in the centralized production of progressive office equipment (the production and technical aspect);

3) A mechanism for introducing progressive ideas (the organizational aspect).

The method of introduction can easily be imagined, for example, in the form of a system of appropriate state standards which rigidly oblige and interest the designers of industrial buildings, the construction organizations and engineering-technical services of enterprises to actually observe the requirements of NOTiU in designing and building new plants and shops, in introducing new equipment and production processes, in the reconstruction, reorganization and full mechanization and automation of production.

What has been realized of the proposed program? As enterprise specialists having an opportunity to judge the state of the problem not only from the amount of money spent on it and the intensity of the discussion, but primarily from the real end results, we can confidently say that only the first, procedural part has to some degree been carried out. If the search is very good, then standard designs for the organizing of work areas can be found. But in a predominant majority of instances, it is simply impossible to obtain anywhere a single allocation order for the purchase of modern tool cabinets, spacious universal work benches, carts for interoperation transfers with pneumatic or other mechanisms for loading and unloading the load to be moved, standardized production crating, multitier automated shelving, intercom systems suitable for use in an area of operating equipment and much else envisaged by these standard plans. It is all the more unrealistic to speak about an efficient mechanism for producing progressive NOTiU decisions which has already been set up in industry.

In our view, the Goskomtrud has done particularly little to introduce the scientific organization of management. The norms for the number of engineers, technicians and white collar personnel based on not always representative statistical material as well as the standard organizational structures which, as is now seen, more often impeded flexibility at the enterprises than enriching them with a dependable methodology--these, in essence, are all the studies which have been issued to the enterprises and associations over the last 10 years since the all-Union methodological and sectorial NOT centers were renamed the Center for the Scientific Organization of Labor and Management (TsNOTiU).

Many major problems involved in the organization of management are the responsibility not of the Goskomtrud, but rather are under the leadership of the USSR GKNT [State Committee for Science and Technology]. Among these are: the computerization of management, the combining of the territorial and sectorial aspects of management and so forth. The absence on a national scale of a single center coordinating the entire range of problems relating to organizational development clearly impedes a further improvement in production management.

In order that all the components of the possible effect from the introduction of the scientific organization of labor and management "work" in a planned manner toward the common end result, in our opinion, even during the current five-year plan it is advisable to carry out the following measures:

1) To more closely link the system of NOT planning with the actual requirements of the enterprises;

2) Examine the question of entrusting responsibility for organizational development in industry to an independent state committee (by analogy with the responsibility of the GKNT for technical progress) and free of other narrow departmental tasks. The question of the advisability of setting up such a body responsible also for the automation of management has been repeatedly raised (see, for example, the article by Academician G. M. Glushkov in PRAVDA of 30 June 1981);

3) To fundamentally improve the exchange of information on advanced achievements in the area of NOT and management, having put the main emphasis on practically tested procedural studies and introduced organizational plans and systems;

4) To work out and publish new normative documents, in particular, standard regulations on the NOTiU departments and laboratories as well as the necessary state-wide standards which would take into account the advanced experience acquired in recent years and create an opportunity for forming NOTiU subdivisions as staffs for the comprehensive organizational development of the enterprises and associations.

Finally, a word about a particularly pressing problem. An organizational specialist at an enterprise must design organizational systems, create organizational plans, determine under what organizational and technical conditions they should be introduced, support the introduction of organizational systems in operation, constantly improve them, in adapting to the changing conditions and goals of production, in a word, do the same work in an organizational sphere which is done by production engineers, designers and other engineering personnel, in ensuring technical progress. The latter for completely understandable reasons are not included in the administrative-managerial personnel (AUP), and the enterprise director has greater freedom in setting their number, proceeding from the arising problems. But the NOT service is part of the AUP and for this reason a plant director often is unable to strengthen it either in numerical or skill terms.

The classifying of the enterprise NOTiU services as the AUP contradicts their tasks, the nature of their work, it impedes staffing and gradually encourages an irresponsible attitude toward the very idea of systematic and planned improvement in the organization and methods of work.

The scientific organization of labor and management is one of the basic areas for intensifying production. The work of our service has been organized taking this into account during the 11th Five-Year Plan.

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NEW INDICES EXPLORED TO MEASURE, UPGRADE INDUSTRIAL PERFORMANCE

Novosibirsk EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 7, Jul 82 (signed to press 26 May 82) pp 45-52

[Article by L. V. Neverovskiy, deputy general director for economics: "A Comprehensive Plan for Economic Work"]

[Text] During the 11th Five-Year Plan, in the aim of improving production efficiency, along with a system of measures in the area of scientific-technical progress and improving product design and production processes, our association [Elektrosila] approved a comprehensive plan for raising the level of economic work. In essence, this was our program for improving the economic mechanism of the association's management.

Of course, work had been done previously to upgrade economic activities. But the individual adjustments were made gradually as the need arose, they were not always interrelated and at times were contradictory. The comprehensive program should unify all areas of economic work and all links in the production chain and focus them on achieving the best end result with the least expenditures.

All the sections of the program are interrelated. In each management unit of the association, measures have been worked out for its section and the economic management unit, on the basis of these, has drawn up a unified comprehensive plan for economic work. This plan has a common methodological basis resting on a system of new indicators and uniform norms. The plan consists of six sections:

1) Economic training of personnel;

2) Increased effectiveness of internal production cost accounting;

3) The improving of planning;

4) Planning and encouraging of new equipment;

5) Labor measures;

6) Legal work.

The first section envisages measures for the development of economic thinking, an essential prerequisite for all other measures aimed at production efficiency. Previously this involved the studying of party documents and government decrees on improving the economic mechanism as well as the current regulations and instructions adopted on this basis.

During the studies all aspects of the new economic mechanism are examined in the specific situations of managing the association and its subdivisions. The following forms of instruction are employed: worker economic schools and schools of communist labor, economic seminars for the engineers, technicians and leaders. In line with the conversion of the association to the new procedure of planning and economic incentives, we organized brief courses for the shop leaders as well as for the leaders and economists of the planning departments of the affiliated plants and the planning bureaus of the shops. A unified procedural council was organized for coordinating work in the area of economic education in the political network and the economic training network.

In the section "Improving the Current System of Cost Accounting" the central place is held by measures to introduce the new cost accounting indicators, primarily the indicator of normed net product (NNP). We have worked out a procedure for calculating the net product norms for groups of shops due to the fact that the planning and accounting of NNP in the shops manufacturing assemblies and subassemblies of a product and in the shops where the product output is planned in pieces have their particular features.

With the conversion to NNP as an experiment on 1 July 1981, we made adjustments in the system for internal plant cost accounting. For the shops the indicator of the product volume in calculated wholesale prices was replaced by the amount of NNP in shop norms, and we also introduced a wage norm for the in-industrial-production personnel per ruble of product in the shop NNP norms and growth rates for labor productivity and the return on investment calculated using the shop NNP.

Certainly, analytical work should be improved. We have planned a series of studies on the operation of subdivisions under the conditions of NNP in compaison with analogous indicators calculated for commodity product in wholesale prices.

The effectiveness of internal plant cost accounting depends largely upon the system of employed economic levers. While previously the economic incentive measures were clearly outlined by the bonus provisions and procedures, the system of cost accounting responsibility for the subdivisions was extremely hazy. Until recently, as a rule, the shops and departments did not draw up documents on reciprocal cost accounting claims.

In order to increase the responsibility of the shops and services of the plants for planning and technical documents and for supplying the related subdivisions with materials, stock, pieces and preassembled articles, we created a new regulation governing claim work. This includes a classification of the claims, the procedure for drawing them up and resolving them. Claim commisions have been set up. The results of the review of claims are considered in paying bonuses to the shop and service engineers and technicians.

In the course of preparing to convert to the new system of planning and economic incentives, we involved not only the production but also the functional subdivisions in cost accounting relationships. Planning indicators were set for the departments according to their functions. The paying of bonuses to specialists was made dependent upon the fulfilling of these indicators.

In the section "The Improving of Planning," we have established three major areas: improving the system of technical-economic and operational planning and the maximum employment of computers in planning work; the elaboration of a five-year plan for the association and the plants; the drawing up of production specifications. As is known, the work in the area of technical-economic and operational planning at many enterprises has been split between the planning and production departments. As a result the volume indicators are not sufficiently coordinated with the physical ones and integrity in the planning process is disrupted.

Previously our production department drew up the order portfolio while the planning one was responsible for the volume indicators. The product and volume plans were not balanced. Under the conditions of individual and small-series production, where the range of articles do not coincide at all for the planning periods, such separation in technical-economic and operational planning led to negative consequences. For this reason, comparatively long ago the association set up a production planning department (PPO) in the place of the economic planning one (PEO) and all the functions related to technical-economic and production planning were turned over to the PPO.

This department, along with the traditional bureaus for ordinary PEO (prices, costs, cost accounting and others) also includes bureaus for the planning of the production of turbo- and hydrogenerators, large electrical machinery, equipment, consumer goods and exports.

On the basis of the product plan, the department for the technical preparation of production works out monthly schedules for the output of turbogenerators, hydrogenerators and products for particularly important projects and together with the service of the production chief, supervises their execution.

Many products produced by the association such as the turbo- and hydrogenerators, the generators for nuclear power plants and large electrical equipment, involve the building of major projects in power and other important national economic sectors. Their output is planned directly by the USSR Gosplan. Electric motors and equipment are distributed between the consumers through the USSR Gossnab, spare parts for electrical equipment are the responsibility of the Minenergo [Ministry of Power and Electrification] and so forth. Each department endeavors to overstate the orders and to overorder instead of studying the true demand of the clients. There have been frequent instances when the products destined for nearly completed projects which have been given priority even to the detriment of other orders, after manufacturing lie at the warehouse and their installation is put off for a long period of time. This was the case, for example, at the Karaganda Metallurgical Combine with the electrical equipment for the plate rolling shop.

The association's products are complex and the demand for them should be determined ahead of time. Obviously, when the measures outlined in the Decree of of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979 to raise the role of the five-year plans as the main form of economic and social planning come fully into force, many of our problems will disappear. As is known, the decree has raised the task of "in being guided by the control figures, the associations, enterprises and organizations are to work out draft five-year plans for economic and social development (with an allocation of the quotas over the years). Here the associations, enterprises and organizations, together with the marketing organizations are to carry out preliminary work with the consumers and suppliers to ascertain the range (assortment) of the products for concluding economic contracts."

Under the conditions of individual and small-series production, an association must order specially-made multiton forged pieces and castings the manufacturing of which takes from a year to 18 months for the supplier plants. Then our production cycle for the product is continued for an equal period of time. For this reason, for us the presence of a five-year product plan for such articles as turbo- and hydrogenerators and large equipment is a vitally important requirement and a crucial opportunity for organizing the normal preparation of production. We are very often deprived of such an opportunity. This is reflected in the planning of the operations of our affiliates and shops. It may be hoped that the compiling of the plan for the next 5 years will be carried out under those conditions which are envisaged by the Decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979.

The accounting of production capability at the enterprises and associations plays a major role in improving planning. In addition to the association's production specifications we also compile specifications for all the production subdivisions. In compiling these we take into account the actual shift factor of the equipment and the availability of manpower in addition to those document data which are stipulated by the Regulation Governing the Specifications of a Production Association (Enterprise). Without this, an understanding of the capabilities of one or another subdivision could be distorted.

The improving of planning depends also upon improving the system of standards and norms. The association is inventorying all the current standards and norms, it is determining the level of their progressiveness and is replacing the obsolete standards with new ones.

The planning of new equipment is inseparably linked to technical-economic and production planning. The new methods for the planning and economic incentive of new equipment in our sector have been in effect now for over 10 years. Pursuant of the Decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979, we have made certain adjustments. We employ normative methods for planning the amount of expenditures on scientific research and the wage fund for scientific purposes. These measures are provided for in a special section of the economic program devoted to the planning and encouraging of new technology.

A large list of work for the five-year plan has also been envisaged in the section of measures in the area of labor and wages. These are related to improving norming, introducing collective forms for the organization of labor, improving the incentive system on the basis of new indicators. We have created a system of centralized norm setting which is uniform for all the association's production subdivisions.

At present, the association's enterprises employ 600 brigades encompassing 40 percent of the total number of employees. In their majority our brigades are specialized ones which bring together the workers of one profession. An essential difference of today's brigades from the previous ones is that they are complete, they bring together the workers of all shifts and they work under one order. This is of important significance for the machining sections as it reduces time losses in changing shifts and in resetting parts and it reduces the number of workers needed to perform one or another assignment. Particularly significant is the effect in sections with very large unique machine tools where parts are machined for large hydrogenerators. Previously, each of the four machines were assigned carousel lathe operators and assistants totaling 24 persons. With the organizing of a brigade and three-shift work, the number of employees in operating these machines declined to 16 persons and brigade labor made it possible to reduce time losses in changing shifts.

As yet there are few integrated brigades. In EKO (No 8, 1981), A. K. Osipov noted that our brigades are few in number. Yes, this is the case. But we are in no hurry to organize comprehensive brigades, as we must very carefully weigh all the "pros" and "contras." It is a question of a profound reorganization in the process of production organization, revising the status of the foremen, the rearranging of the production sections and changing the system for planning the activities of the shops and sections. As is known, this is a complicated process.

In line with the application of the new system of indicators and the development of collective forms for the organization of labor, in this five-year plan we are revising the regulation governing the socialist competition. In particular, even before the official introduction of NNP as the basic indicator, we began to consider it in summing up the results of the socialist competition. If the NNP indicator is not fulfilled, the production subdivision is not considered among the contenders for a prize place in the competition.

In the comprehensive plan, a significant place is given to improving legal work. This is a very important and, in our view, required section to which unjustifiably little attention is paid. Many middle level management workers and even those of a higher level have little knowledge of the economic legislation. The decisions taken by them contain legal errors. For this reason, we have familiarized all of those who are involved in the concluding of economic contracts as well as persons handling legal documents with the provisions of economic law and the practice of their application.

For improving deliveries, it is essential that the dates for issuing the orders be coordinated with the real dates for production preparations, preassembled supply and the duration of the cycle for manufacturing the product and shipment,

particularly for such complex items as generators. All of this is spelled out in the Decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979. Nevertheless, the Gossnab, the planning bodies and the sector constantly violate the dates. We need more detailed legal enactments and instructions which develop the Regulation Governing Liability for Deliveries.

In turn, we are adjusting the legal documents in effect in our association concerning relationships with suppliers and consumers and concerning the liability of our services and production subdivisions for the deliveries.

It is worthy of note that the legal department in our association is under the deputy director for economics. The advisability of a close tie between the legal and economic services became particularly apparent with the strengthening of contractual work. Not one of our contracts with a consumer goes into effect without the approval of the legal department. In the production planning department a contractual group has been set up and this works in close contact with the legal department.

Penalties and fines tell on the association's profit and the economic service is responsible for this. For this reason we have assumed control over claims work although ordinarily this is the function of the commercial service. In strengthening the responsibility of the services for penalty sanctions made against the association, we at the same time demand that the departments of supply, subcontracting and the chief mechanical engineer promptly seek penalties from the undisciplined suppliers of materials, preassembled parts, equipment and so forth.

In the "Basic Directions for the Economic and Social Development for the USSR for 1981-1985 and for the Period Up to 1990," our association has been assigned a major role as the basic supplier of very large turbo- and hydrogenerators and equipment for utilizing new types of thermal energy.

The carrying out of the program for economic work will help us in carrying out the tasks posed by the 26th Party Congress and the Decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979.

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CERTIFICATION OF SCIENTIFIC-TECHNICAL PERSONNEL DISCUSSED

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[Article by Doctor of Physicomathematical Sciences, Prof V. G. Kirillov-Ugryumov, chairman of the USSR VAK: "The USSR VAK: Facing New Tasks"]

[Text] In the program for the further economic and social progress of our nation in the 1980's, a significant role has been assigned to science. "The Communist Party proceeds from the view," said Comrade L. I. Brezhnev at the 26th CPSU Congress, "that the construction of a new society is simply inconceivable without science." In establishing the feasibility of the outlined program, he emphasized that "the nation has begun a new decade, in possessing powerful economic and scientific-technical potential and an army of millions of trained and dedicated personnel."

The state system for the certification of scientific and scientific-pedagogical personnel is also making its contribution to forming and strengthening the nation's scientific and technical potential. The Decree of the CPSU Central Committee and the USSR Council of Ministers "On Measures to Further Improve the Certification of Scientific and Scientific-Pedagogical Personnel" (1974) created conditions for the training and certification of scientific personnel on a new, higher qualitative level. During the years of the 10th Five-Year Plan the ranks of Soviet scientists received 10,000 doctors of science and 114,000 candidates of sciences. These people in deed have demonstrated the ability to solve complex scientific problems and to carry out the results in practice.

Practice has confirmed the correctness of the underlying principles of the certification system, namely: competence, objectivity, the ensuring of a uniform level of demands which is determined by the needs of a socialist society and by the present state of science. A majority of the dissertation works prepared in the VUZes and NII [scientific research institute] and defended in the specialized councils meet the high requirements of modern science and are of substantial significance for theory and practice.

At the same time, the question of the demands placed upon the quality of expertise by the specialized councils in no manner can be considered resolved.

In 1980, the USSR VAK [High Certification Commission] did not uphold around 400 rulings by the specialized councils on the awarding of academic degrees. Moreover, a significant number of the dissertations, according to the estimates of experts, was on the edge of the acceptable level.

The basic reasons for the rejecting of dissertations by the VAK have been their low level, obsolete research methods, the absence of newness, descriptiveness and incompleteness of the work. It is impossible to replace proof of the dependability of an experiment's results by referring to the timeliness of the research and the essential importance for practice.

To a significant degree the quality of certification depends upon the initial stage of expert evaluation where the scientific work is carried out, where the personal contribution of the candidate can be ascertained with the greatest completeness and a conclusion about his qualities as a scientist and as a citizen can be given. The task of the leaders of the VUZes, the NII and the NPO [scientific-production association] is with the aid of the public organizations to ensure the objectivity of such a conclusion, its publicizing, great exactingness and at the same time sincerity. As yet in individual organizations and specialized councils, proper attention is not given to the initial stage of the expert evaluation of the dissertations or to determining the real involvement of the candidate in scientific research.

Thus, serious violations of the regulations were committed at the Moscow Highway Institute [MADI] from whence issued poor dissertations which were defended not in the given specialty. On the council of the MADI, without approval from the point where the work was carried out, a candidate dissertation was defended by the chief engineer from the Technical Center for the Repair and Maintenance of Passenger Cars of Glavmosavtotrans [Main Moscow Administration for Motor Transport], L. A. Shul'man. Here in the candidate's abstract it was stated that the dissertation had been carried out at the MADI while L. A. Shul'man was not registered as a candidate, but merely assigned to the chair for taking the candidates exam. How is it possible to determine what the applicant actually did for science?

At a number of VUZes and NII, the preliminary expert evaluation of dissertations is carried out formally, without calling in scientists and specialists. Doctoral dissertations are recommended for defense by chairs which do not have doctors of sciences as members (the Central Scientific Research Institute for Resort Studies and Physical Therapy, the Tashkent Pedagogical Institute imeni Nizami, the Yerevan State University and others).

Closely tied to this crucial stage in the expert evaluation of the dissertations is the question of the reliability and authenticity of the documents signed by the leaders of the organizations and forwarded to the USSR VAK. Checks by the state inspectorate of the USSR VAK (inspectorate chief, Doctor of Technical Sciences G. M. Nesmeyuanova) have established that at the Georgian Agricultural Institute, the NII for Economics under the USSR Gosplan, the Higher School of the Trade Union Movement, the Lithuanian NII for Agricultural Economics and others, the copies from the minutes of the sessions of the chairs and laboratories for approval of the dissertation topics did not correspond to the actual minutes.

Certain specialized councils approved dissertations for defense without a preliminary expert evaluation. Thus, six dissertations received by the council from the TsNIIEP [Central Scientific Research Institute for Experimental Designing] of Medical and Resort Buildings and the TsNIIEP for Entertainment Buildings were submitted for defense without rulings from the appropriate subdivisions of the TsNIIEP for Housing. This organization has already been criticized but obviously has still not drawn the necessary conclusions.

The Expert Council of the USSR VAK for Construction and Architecture has handed down a ruling on halting the activities of the specialized council of the MISI [Moscow Construction Engineering Institute] imeni V. V. Kuybyshev due to the fact that the council has violated the established certification procedures and had approved dissertations not meeting present-day demands. Several councils in other organizations have also been deprived of the right to accept dissertations for defense.

The path to improving the quality of certification and upgrading it is through the precise and unswerving observance by all the elements of the certification system, and primarily the council, of the spirit and letter of the Regulation Governing the Procedure for Awarding Academic Degrees and Academic Titles and by the increased responsibility of each opponent, reviewer and council member. It is essential to closely watch and thwart any manifestations of formalism and attempts to adapt to the established rules or replace clear replies on the essence of the newness, reliability and timeliness of the dissertation's conclusions with uninformative arguments and widely popularized phrases. If the specialized councils scrupulously follow the Regulation, if they carefully study the personal qualities of the candidate and hand down definite and clear rulings on the newness and the reliability of the dissertation's results and their scientific value, then expert evaluation in the USSR VAK can dispense with additional reviewing and be carried out within times substantially shorter than those set by the Regulation.

An important reserve for improving the quality of expert evaluation of dissertations is a sound choice by the specialized council of official opponents and leading organizations. However, it does happen that the opponents in no way adhere to the normative documents and submit conclusions in the formation of an annotated exposition of the dissertation's content by chapters. Thus, approximately 30 percent of the responses by the official opponents examined by the department of general technical sciences there lacked estimates for the reliability, newness and value for science of the conducted research. In virtually one-half of the replies, the official opponents did not specifically formulate just what comprised the solution to the scientific problem, but merely limited themselves to a formal conclusion on the dissertation's meeting of the established requirements. Instances of violating the rules of opposition have also been encountered. On the specialized council under the Forest and Wood Institute imeni V. N. Sukachev of the Siberian Division of the USSR Academy of Sciences, the official opponents for the candidate dissertation of O. V. Trofimova were appointed from a single institution. Such a violation of the Regulation forced the USSR VAK to return the applicant's certification file to the council without review.

There have been instances when the specialized councils as leaders appoint enterprises and institutions which do not hold a leading position in the development of the corresponding national economic sector or are little known in the given scientific area. For example, it is impossible to justify the appointing of the Main Economic Planning Administration of the Kazakh Ministry of Culture as the leading organization for the dissertation "Net Income in the System of Economic Relations of Developed Capitalism." In its response the administration limited itself to the note: "...Objective fluctuations in labor productivity related to regional factors of reproduction in Kazakh agriculture do not alter the general law that labor productivity in the sector is growing..."

The Presidium and Collegium of the USSR VAK have repeatedly returned certification files to the specialized councils, drawing attention to the poor quality, unqualified replies of the official opponents and leading organizations. On the question of violating the established procedure in assigning official opponents, the Presidium of the USSR VAK and the expert councils have made serious comments to the specialized councils of the Institute for World Economics and International Relations of the USSR Academy of Sciences, to the specialized councils on political economy of the MGU [Moscow State University] and so forth.

There is a need to more carefully determine the conformity of the dissertation to the council's specialization. At a plenum of the USSR VAK, the deputy chairman of the Expert Council for the Sectorial Economic Sciences, Prof I. V. Belov, gave a characteristic example. The Cybernetics Institute of the Ukrainian Academy of Sciences sent to the VAK a fair work on models for optimizing science. The candidate was a physicist and candidate of technical sciences, but the dissertation was submitted for the academic degree of doctor of economic sciences. In a discussion it was ascertained that the candidate was a knowledgeable physical engineer, but in the economics area his knowledge was below that of the VUZ program.

As a whole the load factor for the specialized councils is low. It is already possible, considering the need for specialists, to determine the necessary number of councils for each specialty and their placement and create a working plan for their optimum network. In reaffirming a council for a new term, the VAK will proceed chiefly from the quality of its work over the previous period. Unfortunately, sometimes a refusal to set up new councils or reaffirm old ones is viewed as an underestimation of a certain national economic sector or is judged from departmental positions or from prestige considerations. At present, when the reorganization is behind us, it is obviously advisable to discuss all petitions on organizing or extending the powers of the specialized councils for a sector of science simultaneously once every 5 years. Such a procedure will make it possible for the expert councils, the certification departments and the Analysis and Information Department of the USSR VAK State Inspectorate to analyze ahead of time and compare the quality of the work done by the councils in terms of specific specialty, to verify whether or not the conditions have been created in the institution where the council is operating for it to work effectively, whether it is possible for applicants from another city to defend a dissertation and then bring their network into accord with demand.

The optimizing of the network of specialized councils is also tied to an adjustment of the "nomenclature for scientific worker specialties." Its adjustment

carried out in 1977 by the USSR GKNT [State Committee for Science and Technology] with the active involvement of the USSR VAK has told positively upon the certification of scientific cadres, but in recent years shortcomings have also been disclosed. There are specialties which are too narrow, which have been made excessively soon into independent ones, which duplicate one another along with the specialties which are an extensive conglomerate with extremely hazy and indefinite limits. The certification departments and expert councils of the VAK are accumulating and analyzing proposals to improve the nomenclature.

The VAK has given and does give great importance to improving the general scientific preparation of the candidates and to raising the role of the candidate exams. However, the latter are often held in violation of the rules in a gray and ordinary manner and not as a measure of state importance. Not enough use is made of the opportunity to increase the competence of the examination commissions by including doctors of sciences from other organizations as their members. The VAK has still not achieved a uniform level of demands in accepting additional candidate exams for applicants whose higher education specialization does not correspond to the dissertation carried out.

In the work of the USSR VAK the questions of the general scientific preparation of the candidates for academic degrees hold a prominent place. We have begun to adjust the programs for candidate examinations in light of the decisions of the 26th CPSU Congress. Here certain minimum programs will be substantially altered in accord with the comments received from the scientific community, the VUZes and NII.

Certification encourages not only increased skill of the scientific and scientific-pedagogic personnel, but also the direction and quality of the scientific research itself. Each year the USSR VAK analyzes the dissertation topics, it generalizes the recommendations from the specialized councils on introducing the scientific results contained in them and forwards these materials in the form of collections to the ministries, departments and Union republic councils of ministers. Moreover, an analysis of the topics makes it possible to establish in what specialties and specific areas of science scientific research is being carried out with what intensity as well as the same for the training of higher skill scientific personnel.

The results of the analysis indicate that as a whole the dissertation topics and, consequently, the topics of the scientific work are timely, they correspond to the basic areas of scientific development and are related to the comprehensive programs and plans for scientific research of the USSR GKNT, the USSR Academy of Sciences and the sectorial academies as well as with the coordination plans of the ministries and departments. However, there are also serious shortcomings. There is still the problem of unimportant topics and unjustified duplication of research is still encountered. In a number of scientific sectors, research on urgent areas is extremely slight or completely lacking with an overabundance of dissertations on studied problems.

For example, the Expert Council for Machine Building and Mechanics noted that a sizeable part of dissertation projects was devoted to sufficiently studied questions with a relatively small number of works on the theory of fundamentally new machines or on the designing of robots and manipulators. There are not

enough dissertations devoted to the problems of powder metallurgy. There are relatively few scientific works and, respectively, an insignificant influx of doctors and candidates of sciences in the area of waste-free production methods, the rational use of fuel and energy resources and increasing agricultural productivity.

The Expert Council for Biological Sciences feels that the regional problems related to the development of Siberia and the Far East have not been sufficiently reflected in the dissertation works of recent years. There are very few candidate (and not a single doctoral) dissertations on the ecological problems of the conservation and rational utilization of the animal world. There is an acute need for serious work in improving planning and management in the agroindustrial complex.

The Certification Department for Specialties in the Area of Power, Instrument Building and Computers has analyzed the dissertations in five specialties defended over the last 5 years. It has turned out, for example, that for the specialty "Heat Engines" some two-thirds of the scientific research is devoted to ship and tractor engines and just one-third to motor vehicle ones, although the need to develop automotive engines that are economic and harmless for the environment is extremely great.

At a session of the USSR VAK Collegium, a special decision was adopted on measures to carry out the Decree of the CPSU Central Committee and the USSR Council of Ministers "On Strengthening Work in the Area of the Economy and Rational Use of Raw Product, Fuel-Energy and Other Material Resources." The Collegium obliged the specialized councils in adopting decisions on dissertation work to set apart the sections devoted to economy problems as the most essential scientific results. In determining the timeliness and degree of newness in the work, the solving of these problems must be viewed as an important factor in the practical utilization or introduction of the scientific results. In planning the topics of dissertation works it is essential to provide for a study of the ways of economy and in working out the programs for candidate examinations in the specialty, to more widely reflect questions of the economy and rational use of resources in them.

A most important area for joint work by the sectorial ministries, the departments and the USSR VAK is the checking of the practical significance of dissertation conclusions and their effective use in production. The realizing of the results from dissertation research will be successful if this actively involves the appropriate subdivisions of the ministries and departments, all the certification bodies and primarily the specialized councils. There is already some experience in this.

The Scientific Research Physical Chemical Institute imeni L. Ya. Karpov can serve as a good example for the integration of science and production. Here research has been carried out for many years on important scientific problems often of an exploratory nature. Individual sections of this research are carried out in close cooperation with major enterprises and, as a rule, end with the defending of one or several dissertations. The process of introduction in such work is an inseparable part of the research process, it is theoretically established and provided for in organizational terms. Similar examples could

also be given from the practice of the All-Union Scientific Research and Design Institute for Metallurgical Machine Building (Moscow), the Urals Polytechnical Institute imeni S. M. Kirov (Sverdlovsk) and other organizations.

In discussing the certification procedures for the individual scientific sectors jointly with the involved ministries and departments, the USSR VAK will pay particular attention to the specific comprehensive programs. The certification of scientific and scientific-pedagogical personnel must become a component part of them, having provided for the training of doctors and candidates of sciences in carrying out the research. It would be useful for the leaders of these programs to employ the certification system for scientific personnel as a means for increasing the effectiveness of the research and attracting young scientists. The specialized councils, in judging the dissertations according to the topic of the specific programs, in turn, must consider the conclusion of the program's leader on completing the corresponding stage of the work as a sufficiently practical testing of the applicant's conclusions.

In the long-range plan for the work of the USSR VAK in improving the certification system, provision has been made for further broadening cooperation with the ministries and departments which directly control scientific research and the training of scientific and scientific-pedagogical personnel, primarily the GKNT, the Academy of Sciences and the USSR Ministry of Higher and Specialized Secondary Education. Particular attention will be given to the creation of the VAK automated information system and to the use of the holdings of completed scientific works kept in the all-Union and sectorial information centers. Each week the VAK processes over 1,000 certification files and it would be very difficult, for example, to verify the newness of the dissertation results without an automated system.

A Leninist style of work includes an attentive attitude toward proposals, letters and complaints. Comrade L. I. Brezhnev termed work with letters a channel for a live contact with the masses. In the letters received by the USSR VAK, scientists and leaders of scientific organizations assess the work of the certification system for scientific and scientific-pedagogical personnel and make proposals for further improving its work. At the same time, there are a good number of proposals which mention specific shortcomings in the work of the VAK apparatus and of instances of red tape, formal replies and an inattentive attitude toward the complaints of candidates. Although the number of complaints in recent years has noticeably declined, the Collegium of the USSR VAK has been forced to impose administrative penalties on guilty workers and take measures to exclude similar instances in the future. The VAK leadership in the future will demand discipline, high quality work and the unswerving following of ethical and moral standards on the part of each coworker in the system.

Success in personnel work is determined by the people themselves, in the given instance by those who work in the certification system. The "weather" in certification is made by the leading scientists, the flower of our science who, in essence, on a volunteer basis combine enormous scientific, pedagogical and organizational work with the difficult and troublesome question of certification. But this cannot be turned over to less knowledgeable and less skilled persons, as it is a question of the tomorrow of Soviet science. We can entrust the expert evaluation of dissertations and the work on the certification councils

only to scientists who have high scientific skills and are capable of defending a fundamental position and following the established standards. For precisely this reason, we must in every possible way commend and encourage their honest unstinting labor in the certification system.

The development of science and technology in accord with the decisions of the 26th CPSU Congress must to an even greater degree be subordinate to carrying out the economic and social tasks of Soviet society, to accelerating the conversion of the economy to the path of intensive development and to increasing the effectiveness of social production. The November (1981) Plenum of the CPSU Central Committee demanded that the role of science be increased and that more effective results be achieved from the activities of the scientific research and design organizations. The activities of many specialized councils at the NII and VUZes in the area of the certification of scientific and scientific-pedagogical personnel instill confidence that they will make a worthy contribution to carrying out the tasks posed by the 26th Party Congress.

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COMPUTERS AID IN JOB CERTIFICATION PROCEDURES

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[Article by V. K. Tarasov, deputy department chief at the Republic Computer Center of the Estonian Gossnab in Tallinn: "Employee Certification with the Aid of Computers"]

[Text] The certification of specialists as a management problem is usually somewhere on the periphery of a leader's concerns and even during the certification campaign itself does not become a number-one concern. There are two viewpoints about certification and these, regardless of the flagrant contradiction between them, coexist quite comfortably:

1) Certification is a very responsible matter since the desire of employees to work productively in the future depends upon the degree of objectivity of their evaluation;

2) Certification is an unserious, far-fetched measure which must be carried out periodically; a worker can be promoted, punished or dismissed just as well without any certification campaign.

Is it not curious that one viewpoint is voiced, as a rule, in a more official situation and the other in a less official one. The paradox is that each of them is valid in its own way. But we will not be concerned with a formal logical examination of the validity of both assertions, but will trace the evolution of the certification procedure and endeavor to establish the generations of certification systems in order, in viewing certification as a phenomenon in development, to understand its essence. In running somewhat ahead, we would point out that in this weak and almost seemingly unviable bud which the certification procedure presently represents is to be found a great future which is not so far off in time.

The Evolution of the Procedure

The founder of the system which has played an enormous role in elaborating the scientific organization of labor, F. W. Taylor, put a system of procedures in opposition to the subjective genius of the manager and saw that this was a good thing. Understandably if the manager moreover was no genius, this was

doubly good. Thus arose the bases for the scientific organization of labor and since then an undeclared war has been waged between the subjective good will and the standardized procedure in managing an enterprise. But both the will and procedure have their pluses and minuses. A feeling for a reasonable boundary for one or the other is an inseparable part in the professional art of a manager.

The certification procedure arose in our country precisely as a limitation on the leader's subjectivism in assessing the labor results of his subordinates. The sharp widening of the sphere of mental labor caused by the scientific and technical revolution has led to the appearance of enormous contingents of employees about whom it can be asserted that:

1) Their labor is not so unique so that the concept of labor productivity be out of place for it (as it is out of place for the labor of a poet, artist or philosopher);

2) The productivity of their labor can and should be increased and hence, the quantity and quality of their labor must be somehow judged in order to encourage it;

3) The individual contribution by each worker of this category is so difficult to isolate that it is virtually impossible to assess his labor in terms of the so-called objective results.

It is easiest for an immediate superior to assess the real contribution of one or another employee (leader or specialist). He knows under what conditions one or another job was performed and by what means, who was involved in it to what degree and to what it led. But here the problem is that man by his nature is subjective and both the person being evaluated as well as the interests of the matter can suffer without meriting this. It is essential in some way to ensure oneself at least against the most extreme degree of subjectivism. Thus appeared the certification procedure which was of a required nature.

The first generation. An immediate superior (in practice, the chief of the personnel department or even the person being certified himself) writes a recommendation which is then signed by the "triangle" [three persons] after which there is a commission session the ruling of which in accord with the position held by the person being certified is entered on the certification sheet. Simple enough? Even too....

Even here are realized rather important principles stemming from the presence of a controlled certification procedure.

1) The principle of documentary traces. In the file are two documents: the recommendation with the signatures and the ruling of the commission. "If need be, these documents can be presented!";

2) The principle of control by the public. Although the opinion of an immediate superior plays a crucial role, even with the passive conduct of the representatives of the community, the very fact of their awareness is of importance;

3) The principle of the possibility of prompt intervention. Theoretically, any of the "triangle" may not sign a noticeably prejudiced recommendation and this is grounds for its reworking or interference by a superior level.

The shortcomings of the first generation procedure are the following:

1) The recommendations are either subjective or, on the contrary, absolutely indifferent and they cannot be relied upon at all;

2) Certification is usually turned into a formality and rarely into a poorly organized independent exam which upsets people and has a random result;

3) After certification no valuable social information remains for the subsequent management of the organization.

It can be said that the correct principles of the first generation procedures in practice were at times subjected to such terrible oversimplification and distortion that in this instance the certification procedure loses any sense.

The second generation. The same procedure, in the aim of increasing the objectivity of the recommendations and giving greater weight to the certification commission sessions, is supplemented by expert evaluations of the professional qualities of the person being certified. For this purpose, a list of professional qualities to be evaluated is worked out and for the recommendation of each person being certified, experts are appointed from his superiors, colleagues and subordinates and these are requested to judge the personal qualities in points. Then the estimates of the experts for each quality are averaged and are assigned average points for his professional and moral-political qualities. The list with the points is turned in to the chief of the person being certified so that he can consider the opinion of the experts in writing up the recommendation. Moreover, this list can be considered during a session of the certification commission for taking decisions on meeting the qualifications as well as for a scenario of the session itself, for example, who of the persons being certified should be talked with in greater detail, what documents are pertinent, for example, if the person being certified has a low rating for labor discipline, then to study the documents concerning this violation).

The drawbacks of the second generation procedure include:

1) The sheets with the evaluations do not have any essential impact on the quality of the recommendations;

2) With large discrepancies between the recommendation and the sheet with the estimates it is not very clear which is to be trusted and in this instance the objectivity of a recommendation written by a superior in the public mind is usually doubted;

3) The labor intensiveness of certification is substantially increased;

4) With the manual processing of the expert evaluations, there is an inevitable loss of information and the confidentiality of the estimates is not ensured and this leads to their nonobjectivity in subsequent certification;

5) The certification procedures with manual processing can be changed at any moment and this frequently leads to a situation where the various leaders redo it to their own liking and sometimes ignorantly;

6) A sheet with the estimates is not a legal document, it cannot be legally defended and for this reason can be completely ignored both by the superior writing the recommendation as well as by the certification commission.

The third generation. In the aim of reducing labor intensiveness, increasing the technical stability of the procedure and broadening the range of opportunities for processing the expert evaluations, the information is fed into a computer, that is, the second generation procedure is automated. Now it is possible to compare the estimates of the person being certified with the average estimates for the enterprise or even for the sector. It is possible to organize a data bank with the expert estimates and to use this in solving management problems.

The drawbacks of the third generation procedure include:

1) The list of qualities subject to expert evaluation is extremely arbitrary and is dictated by a desire to describe the worker "as completely as possible";

2) Certification remains an isolated problem of tertiary importance and the data bank with the estimates is simply not used.

3) Each person understands the point system in his own way (just as for one teacher a four actually means a three and for another a five);

4) The qualities also can be understood differently and even if detailed interpretations of the qualities are provided for the experts the question is not rendered any easier but is sometimes further obscured as some experts read the instructions with the interpretations and others do not;

5) A long column of figures (the point estimates) is difficult to comprehend even visually, let alone "by ear," no image of the worker develops and attention picks up on only three or four figures;

6) There is no opportunity to dependably judge the objectivity of the point estimates and the procedure as a whole and for this reason from the two analogous procedures it is difficult to select the better one and hence it is impossible to consistently improve the procedure;

7) The problem of the loss of information is not completely solved since much manual labor still remains;

8) The status of the sheet with the estimates remains as before and hence as before it can be ignored.

Sometimes, they fall into the temptation of reducing the column of figures to a certain final number of points, that is, judge the worker by just one figure. Then, having seen in practice the absurdity of the obtained results, they rank

the characteristics or complicate the algorithm for obtaining a final estimate but as yet no one has achieved a firmly established success by following this path. Certainly an integral estimate of the worker could be obtained significantly more simply and dependably by asking the experts whether or not this is a good or bad employee as a whole.

The impression might be gained that the more advanced the procedure the more shortcomings it has. This is partially the case as like it or not development follows the path of complicating the certification procedure and this provides grounds for evermore concrete and numerous complaints.

The development of the procedure is obvious, but there is also the question of whether or not there has been progress in this. Is the third generation actually better than the first? Whatever the opinions might be on this issue, they are only opinions. What is urgently needed is a quantitative criterion for the objectivity of the certification procedure and such a criterion is realized theoretically and practically in the fourth generation. All that we will take up below relates precisely to this generation.

The Method of a Professional Portrait

Let us recall the third generation procedure. In front of us lies a column of figures obtained from the computer describing the professional qualities of Comrade Ivanov. We run our eyes over the figures, sometimes stopping on too high or too low marks. This means that in some ways Ivanov is much better and in some ways much worse than others. We try mentally to recreate an image corresponding to these figures. Let us assume that he possesses great knowledge, but is quite lazy. We again look at the figures, selecting those which would in some way complement the description and help us distinguish Ivanov from all the others. It turns out that he is not only lazy, but also sometimes undisciplined.

We studied Ivanov very carefully, looking several times at the column of figures, but as a result our notion of him was extremely schematic, just five or six very brief phrases. Such are the humble capabilities of the human memory. But then we suddenly forgot what the sixth phrase was and we had to reexamine everything from the start.

In order not to forget again, we now look at the figures, translate them into phrases and then write them down. Now it would be a good thing to establish a certain procedure for translating the figures into phrases and placing them on the sheet, that is, we must work out an algorithm.

Here we remember how we were deceived in proposing the use of the third generation procedure as all this work could be done by computer and significantly faster and better than we can!

Now a certain dissatisfaction remains with the very category of the point system: why do the experts have to torture themselves over the interpretation of various professional qualities and wonder what evaluation to give? Certainly, if a person must reflect over a choice it means that the choice is not permanent

and in a different situation, in a different mood he possibly would give a different evaluation! Probably the procedure should be simplified as it would be better not to evaluate anything, but merely select from the ready phrases, those which seem suitable, that is, sort according to "suitable--unsuitable." Then we will succeed in eliminating two surplus and distorting elements: the conversion from phrases into points and the conversion from points into phrases. Now the computer from the multiplicity of phrases chosen by the experts selects several (for example, 16) and compiles from them a description, a professional portrait, of the person being certified.

The quality of the portrait compiled will undoubtedly depend upon the procedure which has been set by the computer, that is, upon the algorithm. On the other hand, the quality of the portrait depends upon what selection of phrases is offered to the expert. Finally, in order to facilitate his work, this (very extensive) set must be in some manner systematized and organized in the form of a dictionary of professional descriptions having a certain structure. Finally, it can be asserted that the quality of the professional portraits will be determined by two factors: by the quality of the dictionary of the professional characteristics and by the quality of the algorithm for forming the professional portraits.

At first glance a third factor should also be added: the conscientiousness, objectivity and preparedness of the experts. But in the fourth generation the importance of this factor has been sharply reduced as the center of gravity has been shifted to the quality of the algorithm as it "should bear in mind" that the real (and not thought up by the researcher) experts are subjective, sometimes not conscientious and not always successfully selected and so forth.

The Identification of a Personality from a Professional Portrait

The computer-compiled professional portrait differs from a manually written traditional description primarily in the fact that in the technique for preparing it is rigidly fixed and any deviation from it leads to a situation where the computer simply does not turn out any portrait. This is an important property due to which we can obtain a quantitative estimate of the portrait's quality using a specially elaborated procedure.

Anyone who is even superficially acquainted with the history of criminalistics knows what favorable opportunities it gained for development each time new methods for identifying an individual were invented: bertillonage (measuring the parts of the body), photography, dactyloscopy (fingerprinting), a verbal portrait, a photographic robot and so forth. In actual terms these are methods for identifying not so much the personality as the external appearance. But the method of a professional portrait remains indifferent to external appearance and the personality is what interests it. But the technique by which we determine the quality of the description remains as before: out of the object submitted for identification we must find the true one. The number of errors in identification is also a quantitative characterization of the quality of the description. In other words, if from the professional portrait, it is possible to identify the employee without error, then the quality of the portrait is considered ideal, while if it is completely impossible to identify him, then the

quality is useless. Hence, before the procedure is put into industrial operation it is essential to conduct an experiment on identifying employees from their professional portraits and on the basis of this derive a quantitative evaluation about the method's suitability.

This property of the fourth generation procedure, that is, the ability to quantitatively assess the quality by objective means and not by a generalizing of opinions, is a radical distinction of the fourth generation procedure from the previous ones.

We would like to tell about two experiments which we conducted with two variations of the procedure in the aim of selecting the better one.

In identifying workers from their portraits, each person making the identification (the respondent) was presented with 10 professional portraits of his comrades at work. From them he was to select 3 that were most like the person being certified (his true portrait was always among these 10). The respondent then ranked the selected 3 portraits in an order of diminishing similarity with the person being certified, that is, he placed one portrait in first, second or third (the least similar) place. This procedure is considered an elementary act of identification.

For a mathematical description of the results of identification (we needed a quantitative evaluation of the quality!) a special function was introduced, the identification function designated by the letter F.

If the true portrait in the elementary act of identification fell in first place, then F was given a value of 0.9. If it fell in second place, then F = 0.8, and if in third place, then F = 0.7. If the true portrait did not fall in any of the chosen three portraits, then F = 0.

Below we give the results of two identification experiments.

First Experiment			Second Experiment		
F	Number of acts	%	F	Number of acts	%
0.9	116	40.5	0.9	57	45.6
0.8	44	15.3	0.8	22	17.6
0.7	40	13.9	0.7	10	8.0
0.0	87	30.3	0.0	36	28.8
Total	287	100.0	Total	125	100.0

The average value of the identification function for the first experiment was 0.578, and for the second 0.607, that is, the second method provided better results. As is seen from the table, in this instance for 45.6 percent of the portraits the identification was without error. The ideal is 100 percent and only in this instance can it be said that the problem of identifying an individual from his professional portrait has been solved.

Many people doubt that it is possible to achieve a 100-percent recognition as professional qualities are not eternally attached to a person, but rather appear differently in various situations, in various organizations and in different social surroundings. All of this is true and the goal is actually difficult to achieve, but it is still achievable although at present we are not up to it. Does this mean that the fourth generation of the certification procedure is unsuitable for use?

Certainly not. Although 28.8 percent of the professional portraits were such that it was impossible to recognize the person being certified from them, the procedure can fully be employed. The problem is that direct acquaintance with persons who are difficult to identify from the portraits compiled for them shows that in a majority of instances these were in no way remarkable employees and that average, gray and difficult-to-differentiate descriptions had been drawn up for them. Hence, the certification commission in following their portraits, will not make a major error.

It must be pointed out that as a whole the computer-compiled portraits are much more "human" than are the impersonal descriptions usually compiled by hand and suitable only for answering the question "is there a description?" with the reply "there is!" This seems paradoxical but if we reflect a bit then we will realize that this is precisely how it should be. Always when the machine is just an appendage of man its work is human-like. Always when man is the appendage of a machine, its work is souless.

A Dictionary of Professional Characteristics

We have said that the quality of the method depends primarily upon the algorithm and the dictionary of professional characteristics. They both are responsible for quality, but in different ways. It can be said that their "interests" are directly opposite.

The algorithm is responsible for making certain that it is possible to identify the persons being certified from the obtained professional portraits. But what if we assign the dictionary to be responsible for the same thing? This means that we have endeavored to include in the dictionary if not overt hints, (height, eye color and so forth) at least those features from which it is easier to identify a person: the ability to dress fashionably, to behave reliably, to speak sharply without raising one's voice or, on the contrary, fussiness, the habit of rubbing hands together, to scratch oneself, awkward chattering and so forth.

If this path is followed, then a 100-percent identification can be achieved very quickly. But we are interested in the managing of people. If we subordinate the certification procedure to a 100-percent identification as an end in itself, then very quickly we will be thrown out of the enterprise along with our procedure as the leaders and specialists at it are too busy to be involved in experiments which are so far removed from the practical needs of production.

These needs can be approached only with the aid of the dictionary. For this, it is important to incorporate in it phrases which describe only those

professional qualities which we know accurately and which can be employed for solving certain management problems.

In determining the structure of the dictionary, we forget the problem of identification (this is the algorithm's concern) and proceed in the following manner.

We write out the management problems which we would like subsequently to solve using the information collected from the certification procedure (increased skills of the employees, an improved psychological microclimate and so forth).

Then we determine the composition of the features (professional qualities) required to solve each of these problems (technical or economic knowledge, the ability to plan work).

For each feature we select phrases which describe various gradations of this feature: from maximum expressiveness of the given professional quality to the minimal (from "has an excellent understanding of his rights and duties, knows what is provided on this question and where to find it and is able to employ this knowledge excellently..." to "he has no understanding of his rights and duties and shows no interest in this question").

Now, if the dictionary has been compiled precisely in this manner, the employment of the certification procedure for production needs does not represent any difficulty. On the contrary, a new information channel is built in and due to it the technical and economic information which floods the management system of any enterprise is complemented by previously scarce but now regular and dependable social information. This inevitably influences the management system itself and its capabilities.

The Work of the Personnel Department

Now it is time to carefully follow the entire fourth generation certification procedure and see whether or not there are any omissions in it or, on the contrary, concealed or still unutilized opportunities. Of all the services at an enterprise, this procedure most involves the personnel department. We will start by changing the role of this service.

For a start it must be stated that as of now the authority of the personnel service is very insignificant in resolving questions related to the hiring, promotion and evaluating of leaders and specialists. In actuality, the resolving of these questions is concentrated in the hands of the administration and the line leaders and it is the job of the personnel department to draw up the papers. Many people consider the reason for such a situation to be in the circumstance that the personnel workers do not have a suitable education in either psychological, economic or technical terms. We do not share this viewpoint. Of course, education is always useful, but even if a personnel worker had all three diplomas at once, this would not solve the problem.

The low status of the personnel service is determined not by the knowledge of its workers, but rather by the absence of its own information channel which

virtually all the other services have. In actuality, the line services have an excellent knowledge of an actual state of affairs in production and such information can be obtained only from them. The fulfillment of plan indicators requires the constant carrying out of special calculations of a rather extensive volume and for this reason the most accurate and freshest information about their fulfillment can be gained only from the planning service and so forth. But what does the personnel service know that is essential for production about the leaders and specialists and what could not be learned from the leader or from the other services? Actually nothing! Rather the contrary as it itself obtains information about this from second-hand and sometimes even later when a certain personnel question has already been finally and irrevocably settled and the time has come to draw up the papers for it.

The certification procedure is capable of altering this situation and providing its own channel of information about the leaders and specialists, about the ties between their professional qualities and the results of the enterprise's economic operations and hence provide arguments for the personnel workers in resolving personnel questions, in increasing their authority and not artificially, not by the "imparting of rights" but rather naturally "by the authority of knowledge."

The quality of the output of any information channel cannot be higher than the quality of the primary information at its input and for this reason particular attention must be paid to this. Here, any technical details are essential and this means that we must not deviate a single millimeter from the prescribed techniques for collecting and processing the information. This demand seems a banal one and such it remains if we restrict ourselves merely to declaring it and do not undertake anything to implement it in practice.

The problem of the deviation of executors from the prescribed work method is far from new. There are various methods for resolving this. We have basically employed the Ford principle which consists in the following. The procedure is broken down into elements which are so simple and uniform that each of them can have only two states, either it is fulfilled or it is not fulfilled. These elements are distributed between the workers in such a manner that each can perform his element only when all the previous workers in the production cycle have performed their operations. The need for external inspectors is eliminated since the workers themselves involuntarily supervise each other.

Moreover, in constructing the certification procedures we have followed the rule that the logic of operations proposed to an individual executor should be so well thought out and rational that the executor would not have any doubts as to the importance of the scrupulous performance of the proposed procedure and no explanatory work would be needed.

Thus, the personnel department is to perform three stages of work in the certification procedure: the technical, the organizational and the creative.

These names are conditional, but not accidental. In the first stage, it is not necessary to take any decisions merely fill out a form in accord with the instructions. Each line of this form contains information about an enterprise employee: F. I. O., his number, subdivision, position, date of birth,

nationality, education, party affiliation, total length of employment, length of employment at the enterprise and length of employment in the given position. Small convenient encoders are employed for the notation. For example, the position of senior engineer for safety equipment. We look in the encoder and find the letter S (all positions are located in alphabetical order in it). Opposite the position we need is a three-digit figure 685. We enter this figure in the needed column.

First the employee of the personnel department fills out the column with the names of the persons being certified. Who is to be entered here is well known to him as the corresponding decree uniformly defines the range of persons to be certified. Then opposite each name of a person being certified he fills out all the remaining lines, using the personal files and the encoders we have mentioned. After this, he can take a breather and collect his thoughts.

The next operation is the appointing of experts for each person being certified. Here there are two variations: either the expert himself is to be certified and hence is on the list and has a number or he is not to be certified and is not on the list. In the latter instance, his name is entered on the list and given the next ordinal number after the number of the last person being certified. After the line of each person being certified has been extended by the seven numbers of the experts, the work is almost complete. It merely remains to fill in the lines for those experts the names of which we have written below the lists of persons being certified (to indicate their subdivision, position and so forth). With this, the first, technical stage of the work is over. The personnel department transmits the filled-out form to the computer center. We will describe the organizational and creative stages a little later since we feel that the reader is probably somewhat perplexed as the problem is not to enter the numbers of the experts, but how to select the experts themselves as certainly this is a technical aspect of the work!

The Choice of Experts

First, let us deal with the number of experts. It is proposed that seven experts be assigned to each person being certified. If seven cannot be appointed as for each employee it may not be possible to find seven persons who know him well through joint work, then it is possible to appoint less than seven, but in no way less than three as the computer will not tolerate this. Understandably, under which conditions professional portraits will really be printed as obtained on the basis of the estimates of three, four, five, six or seven experts.

Once we have mastered the method of identifying the workers from their professional portraits, it would be a sin not to check in which instance the most similar portraits are obtained.

We made such a check and it turned out that the best quality is found in portraits in the event of four or five experts (the identification function is approximately 10-15 percent higher than in the remaining instances). If this dependence is examined in terms of content, then it turns out that with three experts the portraits are more vivid, stark and subjective and with seven experts grayer, more average and impersonal.

Seemingly, it would make sense to convert to a requirement for five experts as we would only gain from this in the quality of the portraits. This is partially correct. But it must not be forgotten that before the information is given over to the computer, it is in the hands of man (the expert and the puncher). It is inherent to man to err while the computer rejects the errors and produces a portrait only in the instance that it corresponds precisely to the designated method and it does not produce any invalid portraits at all. for realizing this principle it is essential to replace all the detected misinformation by a lack of information. In this situation it is possible to obtain a portrait by two ways: either to have certain redundant information or to organize repeat data processing cycles. Then the detected misinformation is returned to the place of its occurrence, the algorithm replaces it with a new version which is then sent for computer verification. Practice has shown that redundant information costs less than the organizing of repeat processing cycles. This is why it is desirable to have seven and not five experts.

One other consideration. If we take from each expert not all the information, but only that which is closest to the truth, the quality of the portraits obtained from seven experts will be even higher than from five. But the answer to how this can be done is given not by the fourth, but rather by the fifth generation of the certification procedure, a distinguishing feature of which is the achieving of 99-percent identification (involuntary recognition) which is still in the development stage. Then the seven experts will be needed not for reassurance, but for essential use.

The next question is from what group of persons should the experts be appointed first? The procedure proposes that they be chosen from superiors, colleagues and subordinates of the person being certified. This proposition is completely natural and far from new and was proposed by many even in realizing the second generation procedure. What new can be added to this? The fact that the expert evaluation along the "vertical" is more dependable than one along the "horizontal." In any event, this has been demonstrated by the certification experience for 3,000 motor transport workers. All the elementary identification acts were sorted by us in terms of the relationship of the job positions of the person doing the identification and the person being certified. We obtained the following average values for the identification function: a superior recognizes a superior 0.444, a superior recognizes a subordinate 0.704, a subordinate recognizes a superior 0.763 and a subordinate recognizes a subordinate 0.651.

It turns out that a subordinate knows a superior best, while a superior knows another superior worst of all. For this reason, we have concluded that it is better not to appoint other leaders as experts in evaluating leaders if they are not in direct job contact.

The last question related to the choice of experts is who actually should select the experts? The procedure proposed that this be done by the certification commission. From the formal legal standpoint this is correct, but in actuality it turned out to be naive. We even were not surprised when practice followed a different path where in a predominant majority of instances the immediate superior of the person being certified appointed the experts.

We even did not attempt to alter this procedure as we did not see any reasonable alternative. Of the 3,000 motor transport employees who underwent certification using this method, not a single person was dissatisfied with it. Incidentally, there actually was one. We learned that one of the persons certified complained to the party raykom. It turned out that he did not have any complaints about the method but felt that the experts for him had been appointed tendentiously, from among his obvious detractors. I his words, such a choice of experts had been caused by his public criticism of the leadership. The raykom took up the essence of his complaint and we endeavored to extract a maximum lesson from this instance.

The next introduction project was the Standart Scientific-Production Furniture Association in Tallinn. This was not merely a new project, but also a different sector. The adapting of the method required around 3 months and we had time to think how the experts should be chosen. In principle any person being certified, having received an unflattering portrait, could declare that the experts had been chosen with prejudice. How could the cause of such complaints be eliminated once and for all?

We gave the persons being certified the right to choose four out of the seven experts so that the other three were appointed by the immediate superior. We proceeded from the consideration that in practical terms the same experts would turn out to be chosen as in the instance when the direct superior chose all seven. An exception to this would be those situations where bad relations had developed between the superior and the person being certified. Straight thinking suggested that the way out of the situation had been found.

Unfortunately, the practice of choosing the experts at Standart overlooked this reasonable improvement. In any event, far from all the persons being certified knew that they had a right to select the experts.

Obviously, there was another factor which could be expressed by the words: in order that a person can actually use his formal right, it is essential that he have an actual right to use his formal right. Is this complicated? It is, but it is also correct. Just imagine that none of the persons being certified used his right to choose experts and then all of a sudden Ivanov attempted to use this right. What was he up to, did he not trust his superiors?! Ivanov himself, having played through this entire situation in his mind, also determines that it is cheaper for him not to use this right. Subsequently, we take away the right of the persons being certified to select four experts, replacing this with the duty to do this.

The Problem of Anonimity

In describing the procedure, we have stopped at the place where the personnel department passes on to the computer center the filled-out form containing brief information on the persons to be certified and their experts. This information is punched and fed into the computer. The computer sorts all the persons being certified by experts and writes out an assignment for each expert. This consists of two parts: introductory and basic. The first part gives the data on the expert, such as name, subdivision and position. The basic portion consists of several networks (for the number of persons being

certified), and over each of these it is written who is the person being certified, that is, whose professional qualities are to be judged by the given expert. Each network has 80 cells (according to the number of features in the dictionary of professional characteristics). Over each cell is the number of the feature. When the expert carries out the assignment, from the dictionary he chooses the most suitable phrase for the person being certified and enters its number standing in front of the phrase in the dictionary in the corresponding cell. Under each network the computer prints out a series of auxiliary digits.

The workers at the computer center tear off the first part of each assignment and put the basic part of the assignment and a copy of the dictionary in an envelope. The envelope is sealed and the introductory part of the assignment is fastened to it in such a manner that the envelope can be opened only by tearing off the name of the expert, that is, by making the envelope nameless. This technical procedure gives the expert the right to remain anonymous.

It is easy to realize that if an expert waas not certain that his evaluations would not be made public, he would carry out his assignment from completely different positions and with a different result than in the instance when anonimity was guaranteed for him. But it is not so easy to see that if the expert evaluations begin to be used on the sly against the expert himself, sooner or later this will become known and inevitably would discredit the method. Fortunately, we followed this simple truth from the very outset and for this reason the procedure in all regards protects the expert evaluations against prying eyes.

The Formation of Professional Portraits

The workers of the computer center hand on the envelopes from the experts to the personnel department and here the organizational stage of the work starts.

At this stage, the envelopes must be handed out to the experts, they must be instructed and after the experts have carried out the assignment, the envelopes are collected and they are returned to the computer center. The personnel department does not verify the quality of the experts' performance of the assignments as this does not concern it. It receives the envelopes sealed and nameless from the experts and what is inside the envelope is a personal matter for the expert. The personnel department merely more or less makes certain that an overall number of envelopes remains for even if two or three envelopes are short for every hundred experts that is nothing terrible as we have already mentioned a certain redundancy of information. An expert can fall sick, go on leave or drag his feet, but this does not change things or halt the course of events as the seven do not wait for one.

What problems arise here? Let us begin with the instruction session. Although the instructions for the expert are appended to the dictionary and are written in a primitively accessible and sincere tone, many persons have become accustomed to seeing in a written text something more or something less than is written there and do not rest until they have it down pat. The social experience of such people must also be considered. The instruction session should be brief and basically repeat verbatim what is written in the instructions.

If there are seven experts for each person being certified, then naturally with mass certification for each expert there will be an average of around seven persons being certified (in actuality somewhat fewer since not every expert is to be certified himself). But the persons being certified are distributed unevenly to the experts: some have just one person to be certified and others have over 30. If we consider that it takes an expert 30 or 40 minutes to evaluate the first person being certified, then the carrying out of the assignment can be unrealistic. In actuality the time for describing each subsequent person being certified drops rapidly and approaches 5-7 minutes since the dictionary becomes evermore familiar.

The experts return the envelopes with the completed assignments and in this manner the organizational stage is complete. The results are punched and fed into the computer. This catches the mistakes arising in carrying out the assignments and in the punching and totals the information relating to the same person being certified. In an extreme case one person being certified may have 560 different phrases selected by the experts (seven experts multiplied by the 80 features in the dictionary). In actuality, of course there are fewer but still rather a lot. Only the computer can understand this jumble of statements and it should select and formulate just 16 phrases which comprise the professional portrait. For this it compares the estimates of the different experts for the same person being certified as well as between the persons being certified in order to determine what is most characteristic for the specific person being certified and at the same time most distinguishes him from the others. Examples of such "machine" descriptions will be found at the end of the article.

The actually obtained certification sheets printed out by the computer are a completely finished document lacking only a signature. Of course, the professional portrait has to be fleshed out. The members of the certification committee can make changes and additions to the professional description. The certification sheets are turned over to the personnel department where the creative stage of the work begins.

A Session of the Certification Commission

Prior to a session of the certification commission, the personnel department should go through a whole series of jobs. We will limit ourselves to just a dry listing of them:

1) Not later than a week prior to the session, each person being certified should be acquainted with his description found in the certification sheet and he should be let sign it;

2) The certification sheets should be sorted by subdivisions as well as according to how serious and thorough a discussion of them is needed with the various persons being certified (for example, with those who, judging from the descriptions, are an obvious candidate for promotion or removal);

3) Together with the chairman of the certification commission, a session schedule should be drawn up with a list of names of the persons to be certified and other invited persons; the schedule is clearly publicized;

4) Additional information should be prepared for each regular session of the commission, for example, data raised on violations of labor discipline, the carrying out of plan indicators, commendations and penalties over the certification period and so forth);

5) Together with the commission's chairman, a scenario for the next session should be planned (the persons attending, the procedure for inviting the persons to be certified, the sequence of speeches, the hearing of additional information, breaks, the withdrawal of the persons being certified when the decision is taken behind closed doors, the procedure for announcing the adopted decisions and so forth).

A session of the certification council is held in carrying out the following rules:

1) The immediate superior is present without fail and speaks giving his opinion on the degree to which the person being certified meets the requirements of the position held;

2) The certification sheet along with the description is read aloud;

3) The person being certified can state his opinion on the description; he must be asked whether he considers this description objective and if not, why;

4) The person being certified is acquainted with all supplementary information which was used for making the decision;

5) After all comments, questions and answers the person being certified should be given the floor;

6) The commission's decision is announced to the person being certified in a clear and understandable form during the same commission session;

7) If the commission's decision indicates one or another degree of discrepancy between the person being certified and the position held or the need for additional study, this decision should be clearly reasoned.

The fourth generation certification procedure has been worked out and introduced within the system of the Estonian Ministry of Motor Transport and Highways. In 1978, around 3,000 leaders and specialists were certified using this method. There were no misunderstandings or conflicts. The method has become widespread in the republic and has been recommended for wide use by the Estonian State Committee for Labor and Social Problems.

The question of how one can employ the sufficiently objective employee descriptions obtained by our method goes beyond the present article. Stupid decisions can be taken on the basis of the best information and likewise intelligent ones on the basis of very incomplete and irregular data. This is a completely different question. In any event, we see in the fourth generation procedures an important condition for improving all personnel work, for eliminating the elements of subjectivism from it and for increasing its scientificness. This is of primary significance for improving the management system.

[Appendix: Examples of computer-generated job profiles]

Let us give as an example three descriptions obtained using the method described by V. K. Tarasov. These came off in this form from the printer of the computer center (only the names have been changed).

Certification Sheet

Road Repair Construction Trust
Leadership
Chief Engineer K. G. Barayev
Born 1927, Estonian nationality, not party member, higher education
Comrade K. G. Barayev has a total employment record of 26 years, including 17 years employment in the given organization and has worked 24 years in the designated position.
Possesses exceptionally great work experience and great practical knowledge.
Possesses very great professional knowledge in his area of work: on many questions can provide consultation.
Has excellent understanding of the technical requirements for construction, repair and maintenance of roads and can give consultations on many questions.
Excellent knowledge of road work technology.
Has great knowledge in the area of the economics of the road system.
Excellently knows his rights, duties and responsibility, precisely knows what is stated about this and is able, when necessary, to use this knowledge.
Has an excellent knowledge of office procedures in his work area.
Is able to construct long-range forecasts and has a feeling for the future.
As a whole, handles the task of creating and maintaining acceptable relations with the leaders of various enterprises and subdivisions, although not always good.
Capable of resolving all questions concerning his work completely independently without waiting for any hints or instructions.
Very self-reliant and constantly overestimates his abilities.
Frequently is excessively critical of orders and instructions coming from above, out of hand suspecting them of unsoundness and unreasonableness.
Works very productively, with a great effect, as a rule, does nothing in vain.
Gives little consideration to the interests of persons working with him, and if he does not ignore them completely it is only out of necessity.
Has a very high general cultural level, he is a very well-read and erudite man.
Meets the position held.
Acquainted with descriptions.

K. G. Barayev

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Certification Sheet

Road Repair Construction Trust
Leadership
Chief of Administration Ya. K. Saari
Born 1927, Estonian nationality, GPSU member, specialized secondary education
Comrade Ya. K. Saari has an overall labor record of 23 years and has worked 2 of these in the given organization. He has worked 2 years in the designated position.

Possesses sufficient experience and professional knowledge in his work area.
Has an understanding of the equipment of a motor vehicle, the technical devices for maintenance and repair.
Has a necessary understanding of the organization and planning of motor vehicle maintenance and repairs.
Has a sufficiently good understanding of bookkeeping and reporting.
Has some legal knowledge, but not completely sufficient.
Has a clear understanding of his rights, duties and responsibility.
Has an understanding of office procedures in his work area.
Has a certain understanding of the theory and methods of management, but not completely sufficient.
As a whole, handles the planning of work.
As a whole, is capable of using the existing opportunities for encouraging employees.
Can resolve many questions concerning his work, more or less independently.
Sometimes capable of showing certain inventiveness and resourcefulness for achieving a goal.
In resolving various questions proceeds from the interests of the matter.
Rarely makes mistakes in work.
Has a completely acceptable general cultural level.
Meets the position held, however he must be sent for further training.
Acquainted with the description.

Ya. K. Saari

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Certification Sheet

Road Repair Construction Trust
Bookkeeping Office
Senior Bookkeeper with rights of Chief Bookkeeper
L. A. Lauteus
Born 1929, Estonian nationality, not party member, specialized secondary education
Comrade L. A. Lauteus has an overall employment record of 33 years. Of these he has worked 13 years in the given organization and has been in the designated position for 13 years.
He possesses great work experience and practical knowledge.
He possesses great professional knowledge in his work area.
Has a certain understanding of the technical demands on the construction, repair and maintenance of roads.
Has a certain understanding of the organization and planning of road work.
Has a good understanding of bookkeeping and reporting.
Possesses good legal knowledge.
Has an excellent knowledge of office procedures in his work area.
Usually correctly judges his abilities and possibilities.
Rather fully utilizes his work day.
In his actions he always considers the interests of persons working with him, perhaps sometimes excessively.
Is able to avoid conflicts with persons even in very difficult situations and is able to eliminate or smooth out conflicts in the collective and bring people to agreement.

Exceptionally polite and correct in relations with persons around.
Scarcely consumes alcohol.
A morally irreproachable person, humble in his everday life.
Has great authority in the collective.
Handles his job well, possibly should be entered in the reserves for promotion.
Acquainted with description.

L. A. Lauteus

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MANAGEMENT CONSULTANT DISCUSSES EMPLOYEE MOTIVATION

Novosibirsk EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 7, Jul 82 (signed to press 26 May 82) pp 90-98

[Article by Candidate of Economic Sciences Ya. A. Leymann, deputy director for science of the Management System Design Bureau of the Estonian Ministry of Light Industry in Tallinn: "Profession--Management Consultant"]

[Text] Who Consults

In a guide published by the International Labor Organization, management consulting is defined as professional aid to a leader in analyzing and solving practical problems and in disseminating effective management experience at the enterprises.[1] What does professional aid mean? By it one understands a great deal: the professional education of a consultant, his experience and competence, informativeness and erudition, ethics and a desire to help.

Thus, a consultant is a profession although not all management consultants have a professional education.

In Finland, where I went for training and participated in joint projects as well as in other Scandanavian nations, the Consultants' Association admits specialists who have at least 7 years of work experience in the chosen sphere. It is assumed that with such experience the required professionalism is achieved. Let me give an example from the life of my Estonian colleague. A specialist on the questions of the organization of wages, he became involved in consulting while working in a sovnarkhoz [council of the national economy], and later as the chief of an administration in a ministry. At present, he is a docent at an institute. His aid is highly regarded at the enterprises and he is a professional wage consultant.

What does aid to the leader mean? This is precisely aid and not taking over for a specific leader. But aid by concrete methods and recommendations and not by general theoretical arguments and good wishes. The most important thing is that the consultant and the leader together are concerned with solving

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[1] "Management Consulting: A Guide to the Profession," Geneva, International Labor Office, 1977.

current and long-range problems at an enterprise. Here there is an important stipulation: the consultant should proceed from the client's requirements and not choose for himself a more interesting or "dissertationable" topic.

In order to help, it is essential to have an excellent knowledge of the leader's daily work and this is also one of the demands on a consultant. It is essential to spend more time at the enterprises and in the thick of production events. In our PKB SU [Management System Design Bureau], we judge the specialists proceeding, in particular, from what portion of the time they spend at the projects with the leaders. A serious shortcoming of many specialists and organizations created to help in management is that they are too separated from actual production.

The dissemination of experience is the next important aspect in a consultant's activities. A working leader does not have time to look for the successful solutions of others. However, management is not just a science and an art, but is also extensive practical activity and ubiquitous experimentation which brings one or another success which would be wise to disseminate. Here also a consultant is required. He must know as many enterprises as possible, and keep a set of alternative solutions in reserve which could be added to at each new project.

The experience of numerous Estonian colleagues indicates how important it is for a consultant to know not only how to suggest, what to adopt from others and what is being done today, but also to predict what will be tomorrow. His help to the leader consists, thus, not merely in analysis, but also in forecasting. In practice many instances are known when consultants have been able to aid managers to make their way under conditions of an acute shortage of resources and advised what actions to undertake.

At the Fifth Conference on the Problems of Managing Economic Organizations "The Theory and Practice of Management Consulting" held in Tallinn in 1978, one of the participants asked: "For 10 years now I have been carrying out contractual work on economics and management. Am I a consultant or not?" I heard a good reply: "Yes, if you along with the client manager resolve real problems in utilizing the experience of other enterprises. No, if you select the problems yourselves, study them for several years and end up with a bulky report...."

In turning to the international guide already mentioned by us at the outset of the article, we will see a very extensive list of personal traits essential for a consultant. These are, in particular: 1) good health and high intellect; 2) the observance of the requirements of professional ethics, politeness and even temper; 3) confidence in oneself; 4) honesty and frankness;... 15) the ability for self-improvement, high self-discipline and so forth.

We will not list all the qualities, but even so it is clear that they are high. Will people be found who satisfy such high demands? Here the important thing is the level below which one must not drop. The lacking qualities can be taught and compensated for by others. The consultant must also have knowledge in economics, psychology, mathematics, some engineering specialty as well as practical experience and a certain age.

Positively viewed are a special training in management and at least 2-4 years of experience in management work. It is possible to become a consultant immediately after completing a VUZ, but, of course, under the leadership of experienced colleagues. Preference is given to young persons working on their candidate degrees. The upper limit for entry into the consulting sphere is considered to be an age from 36 to 40. Beyond this limit it is felt that people may encounter difficulties in mastering the new methods and the new style of conduct.

In Estonia, a great deal of attention is given to improving the skills of consultants, conferences and meetings are held with Finnish colleagues and since 1979, special weekly seminars have been introduced. "Azbuka upravlencheskogo konsul'tirovaniya" [The ABC's of Management Consulting] was published as the theses of the first seminar.

I personally know many who systematically study management consulting. They all are marked by high erudition, industriousness and optimism and a desire to work in a given area and to learn constantly. As an example I would name two specific persons although I will not give their names.

Consultant A, 34 years of age, an economist by education who teaches in a VUZ. He does not have experience in managerial work. Has been engaged for 9 years in consultations. He is constantly employed and works both by contract and under direct ties with enterprises. Due to his personal qualities and experience he has many orders.

Consultant B, 41 years of age, a mining engineer, works as a leading consulting engineer in a design bureau. He has practical experience in the management sphere as he was a department chief of a ministry and a deputy director of an industrial enterprise. His experience in consulting activities is relatively small, some 3 years, but due to his experience and personal qualities has received many orders. Both consultants for the first years worked together with more experienced specialists and read a great deal.

Abroad there are numerous consulting firms consisting of several co-workers or even an individual. Instructors in the higher school also are involved in consulting activities. In our nation the NII [scientific research institute], the VUZes and so forth provide consultants. There are few of them because there are organizational factors, the wage question has not been settled and often the client does not know how to employ the services or does not believe in such assistants. The "market" as they say, is small. But at the same time the consultants are also humble. If there were more of them with greater competence then the "market" would also be wider.

Science helps in any activity. However, many management scientists are still playing with such words as comprehensive, systematic, program and so forth. The possibilities of a systems approach are exaggerated and the situational and comparative approach are underestimated. But in management the situation is just as important as the system. In consulting work it is not always essential to approach an enterprise comprehensively, one can never be too sure and it is possible to be swamped. The main thing is to find the key element.

At present more and more is said about innovation. The concern of consultants is organizational and often comprehensive innovation. Thus, they aid in developing the theory and practice of innovation.

Hence, consultants are not scientists, but they do aid in developing management science. Scientists are not consultants (although some of them can be), but they do improve the bases of what the consultants can employ. Consultants can expect a great deal from management science (although more empirical research) and they themselves should give a great deal to science.

How and What Does a Consultant Work On?

A consultant must establish contact with the manager and together go through all the consulting stages in aiding one another. The first stage is diagnosis. Sometimes it is necessary to persuade a manager who is worried about one problem that he is suffering from a completely different one. The consultant determines precisely what must be taken up or abandoned if something does not help the client. Let us assume that a contract has been concluded. Then the problem is clarified and the goals and expected results are concretized. The collecting of information begins as well as the elaboration of proposals which precede realization. This generally is the international method.

Often at enterprises all variations for improving management are potentially prepared. The task of the consultant is to assemble the decision makers and select the best of the proposals. In other words, one of his charges is to see to it that the managers themselves determine the problems and find their solutions.

As an example, let us take the problem of intraplant and external transport. There are numerous proposals, in particular, to set up a transport shop and carry out centralization. The consultant invited in is acquainted with the organization of transport operations from the literature and the experience of other enterprises. But this knowledge can only complement or clarify a more or less correct solution the fragments of which already exist at the client's. It is important that the decision be acceptable precisely for the given enterprise and not just generally so.

The found solution is carried out stage-by-stage. At each stage answers are given to the questions: what is being done, who is doing it, with the aid of whom, by what time, when will they return to a discussion of the course of fulfillment, who is taking a decision to halt fulfillment and how should the results be judged?

Rather frequently we employ so-called group work. In meeting together, a group of 3-7 persons carries out a certain assignment, itself establishes the standards of conduct, organizes its activities and submits the results to the person who set the problem, that is, to the consultant. The effect from such work exceeds the total of knowledge and opinions of the individual group members.

The consultant and the client ordinarily exchange information in a verbal form. Written reports are brief, from 10 to 15 typewritten pages. With more

extensive reports, a three-five-page version is drawn up for the manager. Small size does not mean disregard for a report, but preferred over it is a positive result and a real improvement in management.

Is success guaranteed if one follows the given procedure? Of course not. The consultation path is too complicated and thorny. Hence, the deviations from the given techniques. Let me give an example.

A director, dissatisfied with how meetings were being held at a machine building plant, requested the name of an enterprise where advanced experience could be borrowed. The consultant did not recommend an enterprise, but rather proposed that the director participate in a 3-day seminar at the training center of the Estonian Minlegprom [Ministry of Light Industry] on "Meetings, Assemblies and Conferences." After the seminar, the contented director returned home to carry out what he had learned. But he was not to succeed as all his subordinates were too accustomed to the old way and simply were unable to adapt.

So back to the consultant. He studied the situation, conducted interviews, made observations and himself participated in the meetings. Then at the plant recreational facilities for a day and a half they discussed the question of reorganizing conferences with 20 managers. But, alas, after this the situation became even worse. Everyone realized that it was impossible to work further in the old manner, but they could not in the new manner either.... The situation straightened itself out slowly, but 2 years later, the situation deteriorated and the old mistakes began to be repeated. At the director's request, the consultant was forced to intervene again. And so it went....

"Individual Production"

I have already drawn attention to the uniqueness of each specific enterprise in consulting practices. Moreover, to the various objective characteristics of a situation one must also add the subjective, personality features. It is difficult to work out and design a modern machine, but it is even more complicated to work out and realize changes in the management sphere. In the course of diagnosis it is still possible to rely on formal parameters, for example, available resources. But here it is well known how information can be "filtered" and distorted by involved parties.

The diagnosis of management problems is not the most difficult stage in a consultant's work. Changes are harder. Initially it is essential to change the knowledge of an individual and this is the least labor intensive. It is more complicated to alter the conduct of a person and even more so for various groups of co-workers and, finally, the enterprise as a whole. But this is precisely the chain of events the consultant must follow.

There is one other sequence: attention--interest--desire--action. An aware dissatisfaction with the existing situation and an obvious benefit from change give rise to a desire to act by the joint efforts of the consultant and the client.

Here is an example. At an enterprise they had to improve the system of operational planning and dispatching. There were more shortcomings in it than merits. A specialist, having studied the state of the system, proposed two or three solutions. This makes it easier to change existing notions and arouse attention and interest in the client. The consultant gave his recommendations completely objectively realizing that for any decisions there are both positive and negative aspects. Having selected a new system of operational planning together with the client, the consultant attempted to alter the content of the corresponding work, that is, the conduct of the foremen, the shop chiefs, the co-workers of the PDO [production dispatch department] and so forth. Actually, he tried to change not the work of each individual, but rather the relationships between groups of people who determined the operational planning. Here it was impossible to ignore existing habits. Thus, with unsteady operations, when rush work became customary in order to achieve increased wages, it was difficult to alter the conduct of the workers by improving only operational planning.

In carrying out any changes, it is essential to follow the saying "hurry up, but don't rush." From time to time the material "gone through" by managers should be repeated for reinforcement, one must always move from the known to the unknown, in certain instances provide precise quantitative guidelines and in others only general qualitative goals, remember that people have different capacities to apprehend and do not forget visibility and proof.

Ordinarily it is necessary to change the organization and the manager simultaneously. In the complex world of management, the manager's personality is of great importance. The development of the strongpoints and compensation for the weak ones in a leader is another area where a consultant is needed.

What to Take Up

The limits for the activities of management consultants are rather broad. For example, the consultants from the PKB SU of the Estonian Minlegprom in recent years have helped solve the following problems: improving the organizational structure and the division of labor in the management sphere, the development of cooperation within an organization, a clarification of strategy, questions of office work and personnel management and the holding of conferences. We have worked at enterprises in the textile, footware, garment and other sectors.

Some consultants have a narrow specialization while others are more universal. The former offer recommendations in specific areas such as norm setting, the organization of brigades or the recruitment of managers. The latter basically organize the improvement process while the managers themselves seek out the recommendations.

From the viewpoint of the Estonian Minlegprom, we are in-house consultants, but from the viewpoint of the individual enterprises, we are outside ones. At times we work together with consultants from the Tallinn Polytechnical Institute and other organizations and then the efforts of the in-house and outside consultants are pooled. Certain Estonian enterprises employ persons who might also be termed in-house consultants but this is still just a meager beginning. Time is needed for success.

In order to win confidence, the observance of ethics is also essential in addition to competence. Our bureau has worked out the corresponding principles for a consultant's activities. Approximately the same principles have been approved by the volunteer management committee under the Estonian Scientific-Technical Society. Let me give some of them.

The consultants put the interests of clients above their own. In presenting recommendations, they proceed from their own dispassionate viewpoint, from professional knowledge, considering all essential facts.

Consultants keep the information acquired at the enterprise seeking consultation a secret and do not release it without the preliminary permission from the client.

Consultants are ready to carry out only those jobs which correspond to their skills and the fulfillment of which would produce real and positive results. If a consultant is unable himself to solve the problems posed by the client or arising in the course of the research, then he should recommend other consultants competent in the given area.

Finally, it is essential to recall again that help cannot be given to anyone who does not seek it. Sometimes the leaders of ministries and departments send subordinate consultants to help the managers of enterprises which are suffering from serious problems. In such an instance a consultant is not to be envied. In order to be successful, he must interest the enterprise's leadership in help and this is far from always successful. Moreover, consulting can bring success only where the situation has not become too bad. Ordinarily chronically lagging enterprises need a different sort of help.

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WAYS FOR ASCERTAINING TAUTNESS OF PLANNING REVIEWED

Novosibirsk EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 7, Jul 82 (signed to press 26 May 82) pp 99-111

[Article by Doctor of Economic Sciences V. V. Volostnykh, chief of the management chair at the Leningrad Shipbuilding Institute: "Measuring Plan Tautness"]

[Text] A good deal is said about plan tautness. But when the Decree of the CPSU Central Committee and the USSR Council of Ministers "On Improving Planning and Strengthening the Effect of the Economic Mechanism on Increasing Production Efficiency and Work Quality" set the task of creating its qualitative indicators and using them in economic practice, it turned out that in economic science this problem had been very little worked out. The questions had been posed but there were no practically tested answers.

Let us endeavor to look in greater detail at the problems which have arisen for us in the course of working out a sectorial procedure for assessing plan tautness and the decisions which we have succeeded in finding in our sector. In essence, the procedure employed in shipbuilding has been developed from these decisions.

What is a Taut Plan?

A plan is termed taut in which the production volume increases noticeably in comparison with the previous year, a plant worker replies. But then the question arises: if last year's plan was understated then the plant has great unused reserves which allow it to easily meet the new quota which, honestly speaking remains much below the real opportunities of the plant. Let us assume that a neighboring plant produced a much smaller increase in volume, but in absolute terms produces double the amount of product per worker. Does this mean that its plan is not taut?

We obtain a new answer: plan tautness is determined by the degree to which the plant utilizes its production capabilities. The more fully loaded the personnel, machines and production areas the tauter the plan. Can one agree with this? Certainly there are plants which are rather fully loaded but due to their narrow specialization, stable program and high level of production organization operate steadily, calmly without noticeable tension. At the same time even for an enterprise which is in no way overloaded it is sufficient to

frequently and unjustifiably alter the product mix, not to provide materials and preassembled articles on time and incorporate new, undeveloped products in the program for the plan to be fulfilled only at a price of a colossal straining of forces, although the production volumes have not risen, there are free machines while the personnel have numerous stoppages and other working time losses.

Is it not more correct to say that plan tautness is determined by external conditions under which the plant is put and by the level of interference in its normal operations?

In our opinion, all three versions of the answer are correct in their own way. The listed factors, along with many others, influence the tautness of plant operations, in objectively easing or impeding the production results. Let us endeavor to seek out in them the common factor and formulate the essence of plan tautness.

Plan tautness reflects the degree of difficulty and the complexity in achieving a set result under the given conditions. In order to objectively assess tautness, it is essential to consider also the degree to which the plant (or shop) uses its production capabilities (economic potential), the quality of this potential and the external conditions under which it must operate. A number of problems arise in such an evaluation.

A plant's production capabilities are determined by the number of personnel, by the availability of equipment, work areas and by numerous ordinarily not interchangeable resources. Surplus machine tools cannot fulfill a plan if machine tool operators are lacking and vice versa. For this reason, if production efficiency must be judged from the level of the effective use of all production resources, then plan tautness is determined by the load solely on the scarcest resource. At present, this undoubtedly is the labor force and for this reason it is advisable to start an assessment of plan tautness from evaluating the level of the work load for the employees and the level of their effective use.

But the number of employees does not reflect a plant's production capabilities with sufficient accuracy. People can be provided with good or bad equipment, they have varying skills and their labor can be better or worse organized. For this reason, it is essential to assess the quality of an enterprise's economic potential, that is, the technical level of production, the level of the organization of labor and management and personnel quality. All these parameters must be taken into account in assessing tautness. Also indispensable is an assessment of the impact of external conditions, that is, specialization, serial run and development of the product, and the quality (engineer effectiveness) of the designs.

But even if one succeeds in qualitatively judging the degree of work load for an enterprise's personnel and then considers the influence of the internal and external conditions, a second question would arise. This is:

With what is plan tautness measured?

The efficient use of employees, that is, the level of labor productivity, is most correctly judged not through output (it makes no difference whether in gross or normed net product), but rather by comparing the actual labor expenditures with the socially necessary. For the sector producing the basic mass of shipbuilding products, the socially necessary expenditures in the procedure are considered as equal to the sector average ones.

It is virtually impossible to estimate such expenditures by the direct norming method; for this reason we had to follow the path of relating labor expenditures to the quantity of produced product. It was necessary to work out a classifier for shipbuilding products for each of the types of production (production changes). The ship structural elements are grouped by the principle of design and production uniformity and this made it possible to create parametric norms for labor expenditures depending upon physical measurements conforming to the specific features of the given type of production. For example, for hull fabricating such a measurement is the weight of the metal hull, for painting, the area of painted surfaces and so forth.

In possessing such a norm it is possible to calculate the necessary labor expenditures for the program of a shop or yard and then compare these with the actual labor expenditures. The quotient from dividing these average sectorial expenditures by the actual ones is accepted by us as the index for the efficient use of labor resources. If this is greater than one, then labor productivity at the plant is higher than the sectorial average, and if less, then lower.

The calculating of the norms and indexes are run on a computer using a joint program with the initial data being the data on the actual product output and the number of personnel over the report period. Due to the relatively low labor intensiveness of the calculation, the level of sectorial expenditures can be figured annually. A "floating" standard appears the dynamics of which reflect changes in social labor productivity caused by scientific-technical progress and by other factors.[1] Thus, let us assume that the task of judging the objective result of an enterprise's operations has been carried out. Now the question is of a quantitative assessment of the influence of the external and internal factors facilitating or impeding the attaining of this result on the tautness of a plant's work and that of its collective.

From among the internal factors characterizing the quality of an enterprise's economic potential, we have succeeded in quantitatively assessing the technical and organizational level of production. Evaluation methods have been created and are employed, the growth of the technical and organizational levels is planned for all enterprises and reporting for these indicators has been set

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[1] Due to a lack of space, the article does not give the procedural calculations. For more detail on the methods for calculating the indicators for the efficient use of labor resources and plan tautness, see: R. M. Petukhov and V. V. Volostnykh, "Upravleniye povysheniyem effektivnosti proizvodstva v otrasli" [Controlling Increased Production Efficiency in a Sector], Moscow, Ekonomika, 1979.

up. Next is to create a similar methodology for assessing personnel quality. We have succeeded in assessing the impact of the technical and organizational levels on labor productivity.

We have also found practically suitable methods for a quantitative evaluation of the effect of the major external factors on plan tautness. Among these are the specialization of the enterprises and their subdivisions, the serial run and development of the product, the quality (engineering effectiveness) of the product designs and so forth.

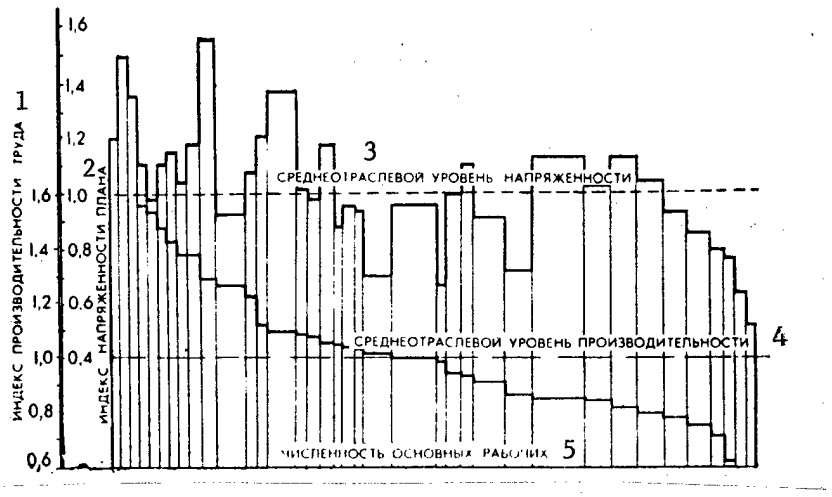
Considering the increase and reduction factors caused by the impact of external and internal factors, it is possible to calculate the individually necessary labor expenditures for carrying out the program of each yard. Naturally, for highly mechanized enterprises or narrowly specialized plants building already developed vessels in large series, expenditures will be below the socially necessary while for old yards with obsolete equipment and engaged in individual construction of all sorts of vessels they will be higher. Having compared the individually necessary expenditures with the actual ones, we obtain an index of plan tautness which, we feel, is more objective than any other indicator which shows how difficult it will be for the plant to fulfill the plan.

What is the Actual Plan Tautness?

From the results of calculating the indicators for the efficient use of the labor force and plan tautness for a large group of yards, we have constructed a diagram (see the drawing) and in examining this the eye is struck by the noticeable difference in the labor productivity level although it is not so great as in metallurgy, many machine building sectors and so forth. While at leading plants labor productivity surpasses the sector average by 1.5-1.6-fold, at certain enterprises it scarcely reaches 0.5-0.6 of the sector average. By increasing the level of labor utilization at the lagging yards up to the sector average we would be able to increase product output by 12-14 percent, while bringing it up to the level of the leaders for the entire sector would cause a 30-40 percent increase. Moreover, the leading yards are far from achieving the full utilization of the labor force.

But a careful study of the importance of the plan tautness indexes shows that the problem is not so simple. It turns out that some of the yards having a low output work no less intensely than the highly efficient enterprises while serious factors impede them from achieving higher results. Conversely, individual yards achieve rather high results without any particular effort. Hence, in their nature the reserves for the growth of labor productivity are different.

A portion of them can be realized by the mechanization and automation of production. In our sector in increasing the technical level from the minimal to the maximum achieved level, labor productivity would rise by 1.2-1.3-fold. Due to the growth of the organizational level, it could realistically grow by 16-18 percent, and in specializing each of the types of production in turning out just one class of product it would be possible to obtain up to an additional 10 percent of the production volume and so forth. However, any of the listed ways requires either significant capital investments or protracted and labor intensive organizational work.



Key: 1--Labor productivity index; 2--Plan tautness index; 3--Average sectorial tautness level; 4--Average sectorial productivity level; 5--Number of basic workers

At the same time, the second part of the reserves existing due to the difference in the tautness of plan quotas can be realized without any expenditures or organizational measures, merely by adjusting the plan quotas. In this manner it would be possible, according to the lowest estimate, to obtain at least an additional 12-15 percent of the product volume presently produced by the yards.

How is the Plan Tautness Indicator to be Used?

Of course, it is not a question of setting a tauter plan "from what has been achieved" for each yard. We know the amount of the reserves for increasing production efficiency and this knowledge must be used for realizing them. The plan tautness indicator can operate in the role of a boundary condition in various planning calculations with optimization elements. It can be particularly useful in solving distribution problems as it makes it possible to divide the contents of the sectorial order portfolio between numerous yards in order to evenly load all production at each of them.

However, such an approach is good only for studies of an analytical nature. But how should a working economist, for example, the chief of a planning department at a main administration, proceed? He cannot freely redistribute the order portfolio as a traditional specialization of the yards has developed and each of them has a large backlog for a certain product and so forth. If the planner tries to add a quota for plants having a less taut plan in such a manner that the load factor is evened out for all the enterprises, then an inevitable fiasco awaits him as the lagging plants surely will not fulfill such an "even-loaded" plan.

Practical experience teaches that no matter how great the unused reserves may be, no enterprise can increase product output (in physical terms) by more than

15-20 percent over a year. From this follow two important practical conclusions.

In the first place, the pace of intensifying production in and of itself is an important factor of plan tautness. A plan can be taut with a plant making little use of its economic potential merely due to a high production growth rate.

Secondly, a real way remaining for the planner to mobilize the efficiency reserves is to differentiate the growth rates for the production volumes between the enterprises. The plan quota received by the main administration is spread out between the enterprises in such a manner that the plants which make poorer use of scarce labor resources receive higher quotas for the production growth rate. In this manner an even (although not maximally tolerable) plan tautness is achieved for all enterprises as well as a gradual use of the reserves of the lagging plants and the bringing of them up to the level of the leaders.

But why not endeavor to have a maximum plan tautness and a quick realization of reserves at all enterprises in limiting oneself to a distribution of what has been put out above the plan? The problem is that under the conditions of the "assembly" sectors which includes shipbuilding, the production volume is firmly limited by the deliveries of materials and, particularly, preassembled equipment. The vessels not envisaged in the plan of a main administration simply will not be built out of nothing.

It has been possible to construct a scale establishing the degree of differentiation for the growth rates of production volumes for the year being planned depending upon the actual level of plan tautness in the report year, having processed the statistical data for a group of yards.

This shows that the plants having less taut plans are marked by a higher growth rate of the production volumes. A little-studied but actual mechanism has been activated for adjusting the plans to actual fulfillment and this levels out the errors in planning and tends toward an even tautness of the plans. Of course, it works far from flawlessly, leaving many unused reserves at many yards. For this reason the replacing of the trial-and-error method based upon a plan tautness norm would make it possible to noticeably improve planning quality and reduce the number of adjustments of plan quotas downwards.

A planner can rely not only on his intuition. In looking at the graph, he can say that with the growth rate of the production volume planned for the main administration of 105 percent, plant A ($N = 0.75$) must have a rate of 113.5 percent and plant B ($N = 1.25$) 101.8 percent. Understandably, this norm should be known not only to the employees of the main administration, but also to each of the plants. Seemingly everything is fine, but here probably the main question arises. This is:

What next?

The procedural apparatus given above is needed not only so that the planner of a main administration can more soundly allocate the plan quotas between the

plants. The next logical step is to place the tautness indicator (along with the indicators of production efficiency) at the basis of the incentive system. In this instance, in our opinion, the presently so essential competitive principle will be introduced into the economic mechanism, in maintaining the inevitable centralized planned management. It can be hoped that the yards, finally, "will line up for a taut plan." For this, it would be essential to make the plan tautness index the basic fund-forming indicator.

At present, the efficient operation of the enterprises is not sufficiently encouraged. The recently published "Basic Provisions on the Formation and Expenditure of the Material Incentive Fund and the Fund for Sociocultural Measures and Housing Construction for 1976-1980" contained the demand to "eliminate unjustified differences in the amounts of the material incentive funds between the enterprises." Certainly the accent was put on "unjustified," but the demand was understood by many as the confirming of a leveling approach to economic incentives. A number of ministries, in particular, chemical and petroleum machine building and the electrical equipment industry, have written into the regulation governing the cost accounting of an all-Union industrial association points that each case of nonfulfillment of the plan by an enterprise which is part of it is punished by a reduction in the bonuses for workers of the VPO [all-Union production association] staff. This encourages a move to "adjust" the plans of lagging plants downwards and shift the load from them to the leading plants.

The end result is a marking of time and this is not the most suitable path to efficiency. We must have leading enterprises which rush far ahead and fully realize their reserves. Only they can create that advanced experience which then becomes universal property and attract the basic mass of plants to fully utilize their resources. Only from the outside does it appear that the enterprises are working at full strength, while from the shop the reserves of efficiency are completely obvious. It is merely a question that the people in the shops wish to use these reserves as they should. This goal can be achieved with the help of an incentive system based upon efficiency criteria. It would make it possible to objectively differentiate the amounts of incentives. With the leading plants receiving more and the laggards less. Since approximately one-half of the plants in each sector will always be above the average level and the other half below it, the total amount of economic incentive funds will not grow.

The leading plant has nothing to fear that the production efficiency level achieved in the current year will be used as the planning basis for the following year and, consequently, the increased incentives will end on 31 December. On the contrary, since the plant will be additionally encouraged over the entire time that it exceeds the average sectorial level, it becomes advantageous to put more reserves to work at once. If it draws out their realization over a long time, it is possible to fall behind the other enterprises and nothing will be obtained. Incidentally, such "antiincentives" work more strongly than direct incentives.

Economic incentives are not just bonuses paid to employees. Efficient enterprises, in our view, should be the first to receive capital investments and funds for equipment for the technical reequipping of production and over the

long run, also manpower. Possibly it makes sense to even deprive the ministries of the right to increase plan quotas for the plants which have achieved a sufficiently high level of efficiency, without the approval of the latter. The more efficiently a plant operates, the more its collective will feel itself to be the master of the situation and the more it will be protected against the arbitrariness of departmental organizations.

We have endeavored to model the conduct of enterprises under the conditions of the above-described system of economic management methods using a series of business games which involved the plant leaders and specialists from the economic services.[2] As long as the game is played according to rules imitating the current management methods, a majority of the participants behaves as in real life, that is, they work for understated plans, they seek additional resources, in a difficult situation they "overload" the plans and so forth. In each group are persons who endeavor in the game to behave differently than in life and to struggle honestly for production efficiency. These "leaders" rapidly bring their "plants" to the lamentable finale of the nonfulfillment of plans, the loss of incentive funds and so forth. The cautious, careful "directors" and "chiefs of main administrations" of the authoritative stripe win.

The situation changes as soon as the game is switched to the rules of an efficiency management system. The "plants" which have been tortured by taut plans and are always risking their nonfulfillment suddenly emerge as the leaders. The cautious and careful "leaders" who previously flourished end up as the laggards. When the initial confusion is over the conduct changes immediately. Counterplans are proposed, everyone burns with a desire to fully utilize his potential and do without additional resources. An acute shortage of orders arises as allocations for materials and preassembled articles are not infinite for the main administration and they are provided to the most efficient plants. Since the lagging enterprises are confronted with the real prospect of remaining without orders, they make every effort to improve the efficiency of their operations.

The prerequisite is created for solving another problem, that of a "scissors" between the number of jobs and the persons who can fill them. Even now at the Leningrad enterprises of the shipbuilding industry, the number of metal cutting machines surpasses the number of machinists by 1.53-fold. Obviously, we can no longer allow ourselves the luxury of utilizing scarce labor resources at inefficient enterprises, each of which is a "whole in the national economic pocket," through which resources are lost. Certain collectives "consume" more than their labor gives society. No intensification of production is now possible without eliminating the inefficient enterprises and concentrating resources at the leading ones. But if the inefficient plants are merely closed down, the remaining ones will not begin to operate better. If each is granted an opportunity to struggle for a way out of the "danger zone" and for maintaining its existence, then the growth rate of production efficiency will inevitably

[2] For more detail, see: V. V. Volostnykh and N. M. Kachalova, "The Business Game 'The Rational Use of the Potential of a Controlled System'," "Sbornik delovykh igr" [A Collection of Business Games], No 1, Moscow, Moskovskiy rabochiy, 1978.

rise. If on the level of the USSR Gosplan the intersectorial proportions and rates of production development and intensification, that is, the completion of new and the withdrawal of inefficient enterprises were maintained in such a manner that there would be a permanent situation of a scarcity of orders and a struggle for them by the inefficient plants, then one could expect a significant rise in the growth rate of production efficiency.

These are the answers which can be given to the questions formulated at the outset. As we can see, even more open questions remain. The answers to some of them must come from economic experiments in employing the tautness indicator in planning. This experiment is now being carried out at a group of shipbuilding enterprises in the Leningrad area. The others still await their theoretical elaboration.

One thing is clear: plan tautness can and must be judged quantitatively. On the basis of the measurements of production efficiency and plan tautness it becomes possible, in our view, to create in the long run an economic mechanism which organically combines the planned regulation inherent to a socialist economy with an active competitive principle which up to now has been so acutely lacking.

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QUESTION OF OPTIMUM INDUSTRIAL BRIGADE SIZE ADDRESSED

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[Article by I. Rudokas, of the Sigma Association in Vilnius: "What Should a Brigade Be?"]

[Text] Much is written about the brigades in industry. This is done willingly and basically with excitement as the use of the experience and initiative of the nation's leading enterprises, above all the VAZ [Volga Motor Vehicle Plant] and the Kaluga Turbine Plant, helps in improving the organization of labor and production. However, the introduction of new forms is not easy to carry out and here the guilty parties are not so much the slowness or skepticism of the economic leaders or the caution or doubts of the workers as it is, in my opinion, the lack of clarity of a procedural, organizational nature.

For example, take the following question: What is the optimum size of a brigade? There is no ready-made answer to this and indeed there cannot be. It is essential to consider not only the type and production, the nature of the brigade (comprehensive or specialized, shift or start-to-finish), but also subjective factors, for example, the personality of the brigade leader himself. However, if in one brigade there are just 2 men and in another 200, then you will agree the concept of a "brigade" becomes somewhat indefinite and hazy. A doubt arises: Is it possible from such diverse collectives to create a unified stable system of brigade labor encompassing the entire enterprise and which would work in the new manner everywhere and not just in isolated areas or unique "oases"?

A small brigade which employs 5-10 men more quickly establishes close relations, a spirit of comradeship and mutual aid and for it it is easier to find a brigade leader since his job is not so complicated as in a large collective. The smaller the brigade the easier it is to create it.

However, the work of small collectives is not completely steady, they have virtually no reserves for unforeseen events and sometimes it takes merely the flu for a brigade of 4-6 men to temporarily cease its existence. Such accidents are lethal for normal steady production. Small brigades are unable to have a moral effect upon idlers, sloppy workers and other violators. The smaller the brigade the more complex interbrigade cooperation is. the production activities of the brigades presuppose an orientation to a certain end product. At

the same time, modern production is a process in which it is very difficult if not impossible to isolate the end product for a small brigade. One must consider a conditional result as such and this complicates planning and impedes ensuring a unity of goals for the brigade, the shop and the plant.

Often plants employ large brigades consisting of 50, 100 and 200 persons. Such a brigade, more often a comprehensive one, under the conditions of the most complex modern production can produce a real end product in the form of a piece, assembly or even an entire article. Certainly a large collective has what a small one lacks, namely, the reserves of personnel and equipment capacity, the possibility of influencing the conduct of its members and so forth. At the same time, in a large brigade, for purely psychological reasons, it is difficult to achieve a unity of all its members and it breaks up into individual groups. This already contradicts the very essence of brigade collective labor. Moreover, the leader of a brigade consisting of 100 workers usually himself does not work at a machine, and if this happens this is more the exception than the rule. With good reason, it has been proposed (possibly this has already been introduced somewhere) to free the brigade leader of production work and call him the brigade leader-foreman. As is known, the foreman can successfully lead a collective the size of which does not exceed 25 persons! It turns out that the brigade leader of a very large brigade should be called not the brigade leader-foreman, but rather the chief of a section or shop or possibly even the brigade leader-director.... Certainly there are plants where the number of employees is just 150-200 persons!

Ultimately, the question is not one of a name or even the complexity of managing a large brigade. Rather the question is that for brigades of 50 and all the more of 100 persons, it is difficult to find a place in the overall system of production management at a plant. Should one put 2 or even 4 foremen under the brigade leader (a clear absurdity!) or should the foreman and brigade leader be put side by side, in parallel and allowed to "coexist." The third variation is to combine both positions and make the brigade leader free of production work. This also is not the answer as it leads to those problems with which we started.

In actuality, the brigade the size of a shop or section with an end product and a leader freed of production duties is identical to a complete-product section or shop which has long existed and is not to our liking. The word "brigade" here is completely superfluous, it does not say anything and does not change anything. Moreover, it can cause confusion as the activities of a brigade can produce a positive effect only in the instance that these will disclose previously unused forces and means, that they will raise the awareness and unity of the labor collectives and the degree of their involvement in the process of organizing labor and managing production and will open the doors of worker initiative. This, in turn, is possible only when the brigade will assume its and its alone place in the management system, when the brigade leader will perform only his management functions and will not duplicate, help or impede anyone else. The main function of the brigade leader is obviously to serve as the intermediate, connecting link, as a crosswalk between the administration and the workers and to contribute to contacts and mutual understanding. A brigade leader-foreman is not suitable for this role since he actually is no longer a workers, his pay is different and so are his interests, and his ties with the

workers are not so close as for a real brigade leader. He even cannot always demonstrate to a young worker how to perform a complex operation for even if he has the corresponding skill he will not find time for this.

It turns out that defining the optimum size for a production brigade is a vast problem involving the very principles of the brigade organization of labor. The importance of this problem grows when it is a question of not an individual brigade, but rather a system of the brigade organization of labor on an enterprise-wide scale, when there is the problem of making the brigade form the basic one. It is difficult to imagine this sytem as ordered and stable if it is made up of very different-sized brigades. The brigade leaders, in meeting at the council, will poorly understand one another since their problems and interests will be different. It is difficult to create a system out of very large brigades. For creating a system of brigade labor, certain standard, average-sized amounts are needed, unique sorts of bricks from which one can lay a wall, even and fine. In other words, it is essential to find the golden mean whereby the brigade becomes a stable, solid and permanent collective and will not be turned into a section or shop.

Certainly such an average size cannot be universal or uniform for the various sectors or for the various types of production. For this reason, it must be determined individually and independently at each enterprise. For example, at the Kaluga Turbine Plant the optimum size is considered to be a brigade of 14-16 persons. In our association, which also has experience in using the brigade forms for organizing labor, each enterprise has its own average-sized brigade. At plants producing individual assemblies or simple products in large amounts, this is 22 persons. At plants producing machines or complex products in small series, it is 8-10 persons. Initially, in the transitional stage from the individual organization of labor to the brigade one, such small brigades could be tolerated. In the process of developing the brigade forms, in setting up systems for the brigade organization of labor, we planned on enlarging the brigades in order to give them greater stability, permanency in work. However, it was not so simple to do this as the brigades already have their roots, traditions and attempts to change something have encountered stubborn resistance. The reason is not merely that any reorganization or change in the existing situation is a difficult or even painful process. There are also objective, production or technological circumstances. For example, where are we to put the gear cutters if there are just 2 persons? Does it make sense to include them in a brigade of lathe operators if they still do not turn and the lathe operators virtually cannot help them in anything? What generally is more important in organizing a comprehensive brigade, the possibility of replacing one another by a machine or the presence of a common end product?

There are many questions in settling brigade affairs, but we would like to mention one other since from our own experience we have been pursuaded that it can be encountered in the very first stage of introducing brigade systems. It is a question of compiling the production quotas for the brigades.

Usually in the books and articles devoted to the work of brigades, the main place is held by wages and bonuses and something can also be found on the organization of labor. But how can a production quota be compiled for a month,

quarter or year? Nowhere will you find an answer to this question, although it is not difficult to realize that without a balanced production quota a brigade will not become a viable labor collective. Planning links the interests of the brigade with the goals of the shop, the plant and even the entire national economy. Ensuring steady production and planning discipline is one of the main goals in introducing the brigade systems. However, for some reason the theoreticians have not taken up this topic. Only in one article did I find such a decisive piece of advice: to break up the system of operational planning if it prevents introducing the brigade forms.... It is not difficult to break something up, but what is to be put in its place?

The Kaluga workers have created their own planning system based on brigade sets, or the end product based on assembly units, although to some degree conditional but on the other hand uniform for all the basic production shops. In this manner two problems were resolved all at once: the brigades receive not only a plan, but also a certain product linking the work and the goals of all the brigades together. Planning in sets, as the workers of the turbine plant assert, is one of the main components in the Kaluga experiment and we must agree with this. Moreover, without the introduction of such planning it is completely impossible to count on a complete effect from the brigade systems, on radical changes in production management such as the elimination of rush work, the overloading of all levels of managers with the solving of minor problems, dispatching and so forth. Incidentally many plants have already become convinced of this, including our own.

However, the Kaluga experiment of making up quotas for the brigades in a pure form, it is greatly to be regretted, cannot be employed at many enterprises. The introduction of a system of brigade planning using brigade sets of their type is impeded by the existing system of operational planning, the so-called Novocherkassk continuous planning system and which, in addition, is linked to the ASUP [automatic planning management system]. How to connect up all these good systems, the Kaluga, the brigade, the Novocherkassk and the ASUP, this is what many plants are now racking their brains about, including our own. Particularly great difficulties are encountered at the machine shops where the brigade organization is generally more difficult to introduce, where there are fewer traditions and experience but where precisely the basis is created for the rhythmical, steady operation of the entire enterprise. It must be admitted that as yet we have not found an answer to this question. Possibly, somewhere the problem has already been resolved and we may be idly wasting time on reflection, debate and experimentation.

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LABOR BRIGADE AS A PROFIT CENTER

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[Article by Candidate of Economic Sciences A. A. Gorel'skiy, docent at the Tomsk State University: "What is Brigade Cost Accounting"]

[Text] Brigades have existed for a long time and in a number of sectors they employ a large part of the workers. Many collectives work under a single order in assembly, the servicing of production units and on flow lines.

How do they differ at present from the previously existing brigades?

It is often said that while previously the basic factors in setting up brigades were organizational and technological ones, at present they are social and economic. This scarcely is the case. At present, only the presence of the necessary organizational and technological prerequisites determines the possibility and potential effectiveness of organizing brigades. It is worth remembering that at the Kaluga Turbine Plant a major reorganization of production preceded the transition to the collective forms of the organization of labor and wages.

The use of labor participation coefficients also cannot be viewed as a fundamental distinction. They, in the first place, are employed far from everywhere and, secondly, they characterize only the method of distributing earnings. But the main thing is for what the coefficient is figured.

Nor can a contractual form of brigade activity be viewed as something new. It has gained limited use in industry. Moreover, it was also used previously, for example, in loading work and construction and in the operating of artels. The job order is one of the forms of a contract.

In contrast to previous ones, present-day brigades are becoming the basic form in the organization of labor, they make it possible to reconcile the forms of the organization of labor and wages and are included in the system of cost accounting relationships as the basic form of primary cost accounting.

It is possible to establish several types of brigades.

Those based on individual labor and individual forms for the organization of wages. The factors uniting people are either formal (the same type of equipment, common territory, single leader) or are of a temporary nature and frequently do not relate to the basic activity (the authority of the brigade leader, a feeling of personal sympathy, a commonness of interests and so forth). Here in essence the form of organizing labor (the brigade) does not correspond to its content (individual labor), but, as the reporting data indicate, such brigades comprise over 50 percent of the total number.

Brigades operating under a single order. Their most important advantage is the reconciling of the forms of the organization of labor and wages. Collectivism is ensured by a common material interest. The single goal is determined by a common economic interest. The end of the 1970's was characterized by the development of precisely this type of brigades. They are formed not only where other forms of the organization of labor and wages are impossible but also where their use is acceptable from the viewpoint of the methods and organization of production and is economically advisable.

Brigades operating on cost accounting. This term has already become fully established in the official materials, in the scientific literature and among practical workers. But there is as yet no unanimity in the definition of the distinguishing features in brigades operating on cost accounting. For this reason for a start it is essential to stipulate what brigades can be termed as operating on cost accounting. These in part include all collectives working under a single order. In other instances brigade cost accounting is related to the presence of a brigade order contract. Sometimes this concept is applied only to the complete brigades in which wages are paid for a finished product. For example, at the Kaluga Turbine Plant all the brigades are considered to be operating on cost accounting while for the VAZ [Volga Motor Vehicle Plant] collectives this term is ordinarily not employed. We feel that here it is not so much a question of differences in the levels of the organization of labor and the development of internal plant cost accounting as it is different criteria in classifying the brigades as operating on cost accounting.

Cost accounting for any unit is organized on the use of a number of common principles: the covering of costs, operational and economic independence, material incentive, responsibility and so forth. Here the form of their manifestation can vary and should correspond to the place of the given unit in the economic mechanism. Considering this, it is possible to state that:

1) A brigade is an organizationally distinct collective having definite independence;

2) The brigades are given plan quotas and the fulfillment of them is accounted for;

3) Regardless of the fact that within the enterprise the results of activity are exchanged between the subdivisions on a gratis basis, that is, without an act of buying and selling, here cost forms are widely used which can perform the role of cost accounting levers (norms, prices and rebates and profit).

For example, the simplest form of brigade profit can be considered to be the savings in expenditures in comparison with the planned ones for a number of basic elements. This savings is reflected in the personal savings accounts. Profit can be considered more fully in the efficiency accounts which include not only the savings of direct outlays, but also the additional income due to the increased production volume (in particular, the savings in conditionally fixed expenditures).

These traits predetermine the fundamental possibility of converting the brigades to cost accounting. But in order to call any brigade which employs them a brigade operating on cost accounting it is essential, in the first place, to ensure not only the issuing of plan quotas to it, but also the responsibility and interest of each worker and the collective as a whole in their unconditional fulfillment; secondly, the brigade must be given not only the operational functions of organizing the labor process, but also sufficient rights and resources in order to actually influence the operating results and bear responsibility for this.

Consequently, in order to speak about the cost accounting of a brigade, it is essential that it be given plan quotas both in terms of product output (product range, volume and quality) as well as in terms of the resources to be allocated for this and at least for the period of a month. If for any reasons this is impossible, then there can be no question of cost accounting. A significant portion of the collectives works not on the basis of long-range and monthly plans, but according to daily shift orders which reflect only the quota for producing finished products proceeding from the actually available workers, equipment and materials. In this instance the brigade is not responsible for achieving a certain product volume over the planning period (month, quarter or year) or for the efficient use of the resources.

The responsibility and interest of the brigade as a whole and each of its members individually is achieved employing collective wage forms combined with the payment of just the finished products and a system of bonuses for carrying out the entire aggregate of plan indicators. Work under a single order provides a unity and common material interest of all the collective's members. But this is not sufficient. Each worker and each subdivision can be judged and encouraged not only and not so much for the amount of work performed as for the useful effect as a whole. This consists in the manufacturing of a finished (in terms of each element) product and in carrying out the plan quotas for the remaining indicators.

The question arises of to what degree the inferior elements and individual workers are interested in the high results of their enterprise? As for the workers, this can be traced in the ratio of the amount of their earnings obtained for individual productivity and for the results of the entire plant.

The share of the material incentive funds from which a predominant share of bonuses is paid for the collective results in Soviet industry is less than 10 percent of the wage fund basically employed to pay for individual results while current bonuses from the material incentive fund comprise scarcely more than 1 percent of a worker's earnings.[1] From this a completely definite conclusion

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1 Yu. Artemov, "Material Incentives in the Economic Mechanism," VOPROSY EKONOMIKI, No 10, 1980, p 67.

can be drawn: regardless of the adopted measures, the material incentive system as before is oriented at achieving individual indicators without regard to the real contribution to the enterprise's results as a whole. Without converting the workers to payment for end results it is impossible to solve this problem. In practice the most diverse forms and variations of wages are employed, including: brigade piece wages with the payment for brigade sets, indirect piece wages, time wages of the VAZ type, the collective part can also include the entire brigade earnings or only a portion of it, it can be distributed through the KTU (labor participation coefficient) and by other means. But they all have a common idea: ensuring an interest on the part of each worker and each labor collective in obtaining a useful effect for the enterprise as a whole.

A brigade is given rather broad rights. With their complete and skillful use, the brigade can influence the labor results of each worker and for this reason bear responsibility for carrying out the plan quotas. However, the rights must be reinforced not only legally, but also employed in practice. Frequently, though, the administration itself without the participation of the collective sets the method of distributing wages and determines the amounts of the KTU for the brigade members, giving the brigade council the right only to approve this. Sometimes the workers are unable to use the rights given them because they simply are not ready for this.

Thus, it is possible to establish a number of basic demands the observance of which is essential and sufficient for considering a brigade as operating on cost accounting. These are:

1) Operating on the basis of long-range and current plan quotas which determine the output of finished products and the resources to be allocated for this;

2) Responsibility, primarily material, and a material interest in the unconditional fulfillment of the plan quotas for all indicators;

3) The use of collective wage forms with payment only for finished product;

4) Developed internal self-control, the presence of real rights for influencing the results of production activities and responsibility for them.

The meeting of the listed requirements with the normal organization of production and economic planning work can be ensured at virtually any enterprise. But the remaining elements of the management system should also be brought into conformity with the new forms of organizing and encouraging labor, that is, a transition from the setting up of individual brigades operating on cost accounting to brigade cost accounting is the next stage in developing low-level cost accounting.

Brigade cost accounting is a management system on the grass-roots production level oriented at the end results and based upon collective forms for the organization of labor and wages in including the primary labor collectives in a system of cost accounting relationships. Its basis is the brigades operating

on cost accounting. But it does not come down to this alone. The larger the number of workers covered by them, the higher their level and the greater their role, the deeper the nature of reorganization in the remaining elements of the system should be, that is, planning, the organization of production, management and so forth. Brigades with an individual type of labor can be set up in any production sections without any substantial changes in the other elements. In converting the brigades to working under a single order, changes are required in the incentive system, accounting and so forth. For converting the brigades to cost accounting it is essential to ensure that the plan quotas have been issued to them, and accounting organized not only for the amount of work performed, but also the results for all the planned indicators.

The successful work of individual collectives can also be ensured without reorganizing the system as a whole. Here often an important role is played by factor of a temporary, accidental nature which one cannot count on with the mass organization of brigades. These include: an exceptionally convenient production area, great authority and organizing abilities on the part of the brigade leader, and particular attention from the administration and social organizations. Individual brigades cannot solve the problem of reorganizing the management system or orienting it at end results. At best, they help in eliminating the bottlenecks at one section and solve a certain local problem. But often, having created several demonstration brigades, they stop at this. In taking cover behind them, the leaders and specialists actually walk away from reorganizing the management forms at the enterprise. Here they have an opportunity to report to the superior bodies, to demonstrate an advanced brigade and brigade leader and share acquired experience with others. Otherwise it is hard to explain the fact that at some plants brigade forms involve a predominant number of the workers while at others it is not more than 30-40 percent and they employ individual forms of labor. After this the conclusion can be drawn that all the reserves have been exhausted and it is ill-advised to continue the work and further improve the organizational forms.

One of the problems of brigade cost accounting is the brigade contract. In some jobs its presence is set out as the crucial criterion for considering a collective as one operating on cost accounting. But a contract is merely a form for legally reinforcing the actually existing or developing elements of cost accounting activity. Incidentally this is atypical for industry. All its elements operate on the basis of instructions, regulations and procedures which determine the place of each element in the economic system and regulate its relationships with all the remaining elements. For example, no shop chief or foreman would ever take it into his head to demand that a contract be concluded with superior managers. Many brigades which essentially operate on cost accounting do not conclude contracts either.

What are the reasons which necessitate the use of contracts? In what cases is this actually justified? The problem is that often the activities of the brigades do not fit within the existing economic mechanism. For example, take the brigade of N. A. Zlobin who was the originator of a brigade contract in construction. In converting to work under the new methods, the brigade began to be responsible not only for performing individual operations but also for the "turnkey" delivery of finished products. Here it was discovered that this collective was the only element in the entire construction conveyor,

including the superior subdivisions and the related organizations, which was oriented toward a finished construction product. The concluding of a contract was the simplest and most convenient form for resolving this contradiction, although far from an ideal one. The brigade leader himself repeatedly pointed out in his speeches that as before the stumbling block was the work of related units which did not participate in the contract.

The situation is analogous at an industrial enterprise. With the converting of the brigades to operating under a single order with payment for end results, the conditions of their activities substantially change. But until the forms of planning, the organization of production, management and economic incentive are brought into conformity with them and are properly drawn up, the importance of a contract as a form for legally reinforcing the new management system will remain. In those instances when the brigade cost accounting is an established and developed system and when all its elements have been reinforced in standards, procedures and other documents, the importance of the contract will be nullified. At present, it will simply duplicate other documents. for example, it is no accident that contracts are not employed at the VAZ. Here all the basic elements of the management system were worked out, coordinated and reinforced in standards even during the designing of the plant.

The content of contracts also needs clarification. The practice existing at many plants, where the contracts come down basically to determining the amount of the monthly or quarterly planning quota, contradicts the system of centralized planning. A plan should be set for a brigade proceeding from the approved enterprise plan and cannot be a matter of discussion. For this reason, the contracts should set down not the amounts of the plan quotas, but rather the conditions for fulfilling them, including: the composition of operations assigned to the collective, the equipment, the list of issued plan indicators, the incentive system for fulfilling them, the method of allocating earnings and so forth.

In industry the most developed and elaborated form of brigade cost accounting is the Kaluga version. It has been sufficiently fully described in the press and has rightly been highly praised by scientists and practical workers. But from this it does not follow that this is the sole possible form. Life does not tolerate routine. And practice has shown the possibility of employing various forms for organizing planning and accounting work and wages, for types of brigades and so forth. In particular, from the example of the VAZ, we can observe an equally complete, elaborated but different form having substantial distinctions from the Kaluga system. Although this element of the VAZ system is ordinarily not isolated, in essence it is an inseparable part.

It is possible to isolate two varieties of brigade cost accounting in industry. These are related to the particular features in organizing the basic element of the system, the brigade. While the VAZ and the Kaluga Turbine Plant have followed the path of establishing yet another element operating on cost accounting, at a number of enterprises, for example, at the Elektrosignal Plant in Novosibirsk, the brigades have been set up on the basis of the foreman sections and even entire divisions.[2] Does this contradict the principles

[2] See: "The Brigade in Production: Today and Tomorrow," EKO, No 10, 1981.

of brigade cost accounting? Obviously not. It is a question of a different form of a low-level unit operating on cost accounting. But here they have maintained the principle of payment for a finished product, the collective forms of wages, responsibility for carrying out the plan quotas and internal self-administration. Moreover, the level of the technological completeness of the products for this type of brigade is much higher than in small collectives and for this reason they to an even greater degree are oriented at the end results.

Another variety of low-level element is the brigade organized on the basis of the entire production chain involved in manufacturing the product (from the preparation to the finishing operations). Frequently, such collectives include workers from several shops. This path, in particular, has been taken at the Moscow ATE-1 Plant. With this variation they can fully realize all the basic elements of brigade cost accounting. But the management system must undergo a substantial reorganization, in particular, the role of the line leaders such as the foremen and shop chiefs will change as well as the place of the traditional subdivisions in the management system. In addition to the linkages of linear management such as "plant--shop--section" and the functional ones characteristic for the existing linear-functional management structures, another group of linkages arises ("plant--brigade") oriented at the finished product.

The criticism of these variations heard in the speeches at the All-Union Seminar on Exchanging Experience in the Development of the Brigade Form for the Organization of Labor in Machine Building held in the autumn of 1980 in Kaluga does not appear convincing. Practice is the criterion of truth in any debate. The designated variations have already shown their effectiveness under the conditions of specific enterprises. It is a different matter if their experience cannot be employed at any enterprise. But in precisely the same manner it is impossible to mechanically transfer either the Kaluga or the VAZ experience without considering the specific feature of production and the traditions of the collectives. It is essential to disclose, study and utilize all the acquired experience both in the area of forming the brigades as well as the elements of their cost accounting, in addition to the experience which most fully reflects the specific features of each concrete production section.

[Appendix] Brigade Contract

For the Complete Start-To-Finish Cable Manufacturing Brigade Operating on Cost Accounting of Division 1 of Shop No 6 at the Sibkabel' [Siberian Cable] Production Association*

We, the undersigned, A. P. Gordeyev, chief of Shop No 6 on behalf of the administration, and T. F. Fefelova, the brigade leader-forman, on behalf of the

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* We give the text of a draft contract proposed to the collective for discussion. In the stages of preliminary discussion, in particular, it was decided not to incorporate the ancillary and auxiliary workers in the brigade although they were completely linked to the given collective and in principle could have made a great contribution to the end results. But the basic workers rejected such a version.

collective, conclude a contract determining the work conditions for the brigade of cable makers of the first division. The brigade is organized in the aim of improving work efficiency, orienting all members of the collective on the end results and on the unconditional fulfillment of the set plan quotas with high product quality and economic use of materials.

The end product of the brigade which is to be paid for is multiwire and strand conductor. The brigade is assigned the execution of the following basic and auxiliary operations and equipment:

1) The twisting of strand with 17 DSO machines;

2) The twisting of stock and strand conductor with 4 SRN machines;

3) The twisting of multiwire conductor with 3 MSD machines;

4) The rewinding of wire with 2 rewinders.

Payment for carrying out the operations of twisting the conductor, the stock and strand (including the loading of the coils and drums) is included in the piece rate per kilometer of finished conductor. The remaining operations are paid for separately.

The normed size of the brigade, proceeding from the plan issued to it, is 21 men, including 19 cable twisters, a rewinder and a brigade leader not involved in production duties. The brigade itself sets the necessary size. In the event of reducing it in comparison with the normed, the entire wage fund is kept by the brigade.

The brigade is given the following plan indicators:

1) For the quarter: the output volume for finished products for the entire basic range; the percentage of growth for labor productivity; a quota for reducing wastes of basic materials;

2) For the month: the volume of output of finished conductor; the percentage of products passing inspection upon first submission; the coefficient of production steadiness.

The brigade is also given the piece brigade rates and the consumption rate for materials per unit of finished product for the entire range and the wage fund of time workers.

The collective is responsible for fulfilling the plan quotas for all indicators.

According to the work results for the month, if at least 88.5 percent of the product passes inspection upon first submission, the brigade is paid a bonus amounting to 15 percent of the total amount of the piece brigade earning and 2 percent for each percentage of exceeding the quality indicator, but not more than 25 percent. With the nonfulfillment of the plan for production steadiness, the amount of the bonus is reduced by 10 percent. for each instance of absence without leave, the bonus is reduced by 10 percent and if there are more than 2

absences without leave, the brigade is completely deprived of a bonus. Bonuses are paid from the wage fund under the condition of fulfilling the monthly plan for the volume of finished product.

The administration with the approval of the shop [union] committee, has the right to reduce the amount of the brigade bonus by 10 percent for violating the labor safety rules, labor and production discipline, or for keeping the equipment and work areas in a negligent state.

With the fulfilling of the quarterly plan for all indicators, the brigade gains a right to receive a bonus for the operating results of the shop. With the nonfulfillment of the plan for product range (and for export products, during the first 2 months of the quarter), the amount of bonus is reduced by 30 percent. With the nonfulfillment of the plan for the growth of labor productivity, the bonus is reduced by 10 percent.

The brigade is paid 20 percent of the value of the copper and aluminum saved over the quarter. The bonus for the saving of materials is paid from the material incentive fund.

All brigade members work on a single order with the allocation of all earnings according to the KTU. Individual surpayments are figured individually and are not included in the total brigade earning.

The brigade is to be headed by a brigade-leader foreman and working team leaders (on each shift) as well as a brigade council. They perform their functions and bear rights and responsibilities in accord with the provisions stipulated in the enterprise's standard.

The brigade is obliged to fulfill the plan quotas for all indicators, to maintain the equipment assigned to it in proper order, to strengthen labor discipline and to participate actively in the social life of the shop and the association. The nonfulfillment by the brigade of the plan quotas, the labor safety rules or labor production discipline involves the complete or partial loss of bonuses according to the current bonus provisions.

The administration is obliged to promptly inform the brigade of the plan quotas, to provide the necessary conditions for carrying them out and account for the amount of work performed and materials consumed. The failure of the administration's representatives to perform their duties to ensure the normal work of the brigade leads to their loss of bonuses according to the current provisions on bonuses for engineers, technicians and white collar personnel. Losses and additional expenditures of labor and materials related to poor quality materials and the nonperformance of duties by the administration are compensated for by excluding the product not supplied with materials from the brigade's plan in determining the percentage of plan fulfillment for product range and production rhythm; the rejected materials are also to be written off from the brigade or the standard for tolerable wastes can be increased in the event of poor quality products.

The contract comes into effect on _____198___ and can be revised upon the initiative of the brigade or the administration in the event that the working

conditions of the collective are changed or there is a discrepancy between the contract and the real production conditions.

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CSO: 1820/198

ATTITUDES, BEHAVIOR OF WORKERS IN BRIGADES

Novosibirsk EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 7, Jul 82 (signed to press 26 May 82) pp 132-139

[Article by V. V. Bronshteyn from the Radio Receiver Plant imeni 50-letiye SSSR in Irkutsk: "Sunken Rocks on the Way to the Brigade Organization of Labor"]

[Text] It would be difficult to find a foreman, shop chief, timekeeper or economist who would be against collective forms for the organization and incentive of labor. On the contrary, everyone is in favor of them. However, not all the brigades set up have justified the expectations and only certain elements of truly collective forms have been embodied in them. Why has this happened? For an answer to this question we conducted a sociological survey at our plant and at 20 other enterprises in Irkutsk Oblast.

Collective forms were judged in the survey for the following criteria:

1) The presence of a plan for the basic technical and economic indicators;

2) The dependence of material incentives for each worker upon plan fulfillment;

3) The distribution of earnings by the entire collective;

4) The work of a brigade leader at the head of the brigade.

The survey showed that the brigade regulations of all enterprises envisaged collective forms of wages but material responsibility for the fulfilling of the plan indicators was provided at only 8. The plan indicators and collective responsibility for their fulfillment were lacking in many brigades even at those enterprises where they are envisaged in the wage regulation.

A complete survey of the brigades at the radio receiver plant produced the following picture. In all the primary production collectives called brigades, there is a brigade leader appointed by an order from the director. In 92 percent of the brigades, wages are distributed with the active involvement of the collective's members, 43 percent of the brigades have plans for the basic technical and economic indicators and only in 33 percent of the brigades is

plan fulfillment actually reflected in the amount of the received bonus, although this is envisaged in the approved regulation on worker wages.

For a comparative analysis of the quality of individual and brigade labor, only those brigades were chosen which satisfy all the above-named demands. As it turned out, the quality of labor by the workers in such brigades was significantly higher than among the individual piece workers. Thus, the growth rate of labor productivity here was 20 percent higher, personnel turnover was 40 percent lower, more product passes inspection upon first submission, satisfaction with the job and working conditions is one-fifth higher. One-third of the workers engaged in individual labor feel that basically the foreman should be concerned with investigating violations of discipline, while in the brigades only 6 percent of the workers adhere to this opinion.

The brigades also show a different attitude toward the adaptation of youth. The questioning of young workers made when they were leaving indicated that the brigade members were significantly more interested in the stability of the collective. Thus, 28 percent of the young workers who submitted their applications for release noted that their comrades in the section did nothing to disuade them. But in the brigades this figure was only 2 percent.

The operational management of production is also on a higher level in the brigades. One of the most important conditions for ensuring flexible management is extensive interchangeability among the brigade members as well as their interest in the results of the joint labor as this encourages them to master related jobs and operations. But with piece bonus wages, it is often advantageous for the workers to have narrow specialization because output in performing newly mastered operations is lower than in performing the basic customary job.

As a result of the questioning it was ascertained that in the near future 21 percent of the workers intended to master a new profession. Among them were 10 percent individual piece workers and 38 percent of brigade workers. There were also substantial differences in the reasons for mastering related professions among the workers employed in individual and brigade labor (see Table 1).

The leading reason for the mastery of related professions and operations in the brigades is the concern of the collective's members for fulfilling the plan. The material incentive forces each person and not just the foreman to seek out ways to overcome the difficult production situations and jointly fulfill a comrade's shift quota which threatens not to be met. Among those employed in individual labor, the request of the foreman is such a reason. This obviously is natural since only the foreman bears material responsibility for the fulfillment of the plan.

In the brigades the relationships of collectivism and comradely mutual aid rise to a higher level and this is particularly apparent again in relation to the fulfillment of a shift quota. With individual piece work there are frequent instances when the collective's members leave for home and one of the comrades remains with the foreman in order to finish his work. In the event that their efforts are insufficient, on the following day a serious shortage arises in the work of the next section or consumer shop and the work rhythm of numerous

Table 1

Reasons for Mastering Related Professions, % of Total

Reasons	Individual piece workers	Brigade members
Work becomes significantly more interesting and meaningful	8	17
Amount of earnings increases	9	8
The foreman insists	41	1
Basic specialty does not provide full workload	11	10
For fulfilling plan, collective's members should be able to replace each other	29	62
Other reasons	2	2

persons is disrupted. In other words, when a material incentive does not cement a brigade together, favorable grounds arise for turning the collective into a group of individualists who think only about fulfilling their own shift quota.

The high level of collectivism in the brigades also influences the foreman's actions. He has to remain significantly less on the job with the nonfulfillment of the shift quota and he trusts the brigade leader and the collective. Moreover, in the brigades there are many fewer workers who do not have a specific shift quota.

The advantages of the collective form of the organization of labor and wages over the individual one are disputed by no one. How then can one explain the fact that at many industrial enterprises the brigades still employ a smaller portion of the workers? Often the brigades are set up under significant pressure from the management and are short-lived.

For an answer we endeavored to ascertain the sociodemographic and skill portraits of the workers who still did not desire to work in brigades. In an anonymous questionnaire the question was asked: Would you consider it advisable in the near future to convert your collective to the brigade forms of the organization of labor and wages?

Some 23 percent of the persons questioned were against this, although 49 percent of the production workers continued to work individually at the plant. Of the remaining 26 percent, 14 percent did not have firm views about this and 12 percent intended in the near future to join a brigade.

The average age of those against creating brigades was 11 years higher than the plant average and was 41.2 years. Their period of employment at the enterprise was 1.5-fold higher than the average and equaled 12 years. As a rule these were highly skilled workers with wages of 295 rubles and this was 67 rubles

Table 2

Conduct of Workers with Designated Failure in Fulfilling Shift Quotas, % of Total

Choice of conduct	Working individually*	Working in brigades
Alone completes shift quota after end of workday	14	3
Finishes shift quota along with foreman after end of shift	34	4
At end of shift the required number of comrades in the section is shifted to fulfilling the shift quota upon instructions of the foreman or brigade leader	56	31
At end of shift, without instructions from foreman, they concentrate their efforts on manufacturing the required items and if need be remain after work	10	49
Incomplete quota is finished on following day	30	12
Do not have a shift quota	16	1

* The respondents named several variations of conduct and for this reason the total exceeds 100 percent.

higher than the plant average. Their skill category was 0.8 higher than the enterprise average and equaled 4.1. Their average educational level was somewhat lower than the remaining workers and equaled 7.8 years. Along with the workers having a low educational level, those not desiring to work in brigades included those having a secondary technical and even higher education. Their proportional amount was low, respectively 9 and 2 percent, but this fact cannot be disregarded.

At the moment of the questioning, the brigades employed only 28 percent of the workers of those having a specialized secondary, higher and incomplete higher education; this is 21 percentage points lower than the coverage of the workers by the brigade form of labor. In this group of highly skilled workers engaged in individual labor, only 8 percent were in favor of creating brigades in their collective and the remainder as yet did not see any need for this. The average age of this group was 34.6 years and the length of employment 8.1 years. Thus, the group of skilled workers having high wages is among the opponents of the collective forms of the organization of labor and wages.

Observations indicate that the manufacturing of the most advantageous products is concentrated, as a rule, in the hands of the most recognized regular workers who are able to gain for themselves minimal quotas for reducing labor intensiveness of the products and have good relationships with the foremen and other leaders. They hold a special place in the collective primarily due to the

knowledge of the entire product range manufactured by the section and their high skills. This allows them to help the foreman in a difficult moment for fulfilling the plan. Moreover they have a rather good knowledge of the labor legislation, the fundamentals of economics and management and this helps them state their opinion forcibly on all production questions and have an active influence on the conduct of the collective and the foremen in the process of resolving such a major problem as the annual revision of output rates. With the piece-bonus wages existing at a majority of enterprises, the workers have a permanent material interest in the minimum fulfillment of the quota for reducing labor intensiveness. This is most within the reach of the highly skilled workers. The representatives of this group ordinarily manufacture the most advantageous product range and do not endeavor to participate in the organization of brigades.

The fact that the improving of labor norming is a major prerequisite for a conflict-free transition from the individual to the collective form of the organization of labor and wages is proven by the sociological research we have carried out. In the brigades newly created upon the administration's initiative, 30 percent of the workers found the work equally advantageous and in the brigades created upon the initiative of the workers themselves, only 9.5 percent. In the brigades 8 percent were dissatisfied with labor norming and among the individual piece workers the figure was 35 percent.

Not only the collective distribution of wages between the workers impedes the creation of the brigades, since this is not the only basic difference of brigade labor from the individual piece workers. An important element in the brigade form is the collective responsibility for the fulfillment of the plan and for the end results. This imposes additional concerns on all the brigade members and frequently requires great efforts to earn the monthly bonus. But with individual wages, the bonus is actually turned into an addition to wages and for obtaining it, at 19 of the surveyed enterprises, it was enough to fulfill the standards calculated according to the rate and the total of these standards, as a rule, did not ensure the required end result, that is, the fulfilling of the production plan by the section and the shop.

With such a system understaffing caused by diversion to agricultural work, by sick leave, absences without leave and by other difficulties, the material interests of each person are not threatened, with the exception of the foreman. Moreover, the remaining members of the section, in the absence of collective responsibility for fulfilling the plan, often find it even advantageous to have low results of joint work. for example, an understaffed collective which has become a bottleneck in production is a matter of increased concern not only for the shop leaders but also sometimes the plant as well. Workers and engineers are sent here from other sections, shops and departments. The wages for outside assistants according the Labor Code is determined from the average earnings of the basic work area. For this reason, with equally advantageous work without any special argument they perform the most disadvantageous, thereby creating good conditions for increasing the earnings of their "kind" hosts.

In addition, there have been frequent instances when the foremen do not provide any reliable accounting of the work done by the outside assistants and the

orders for a large portion of the products produced by them are closed for their own workers. Of all the persons questioned who at one time had to provide aid in bottlenecks, 92 percent pointed to the absence of dependable accounting of their output and only 8 percent felt that all the work performed by them had been accounted for and entered in their name in the order and not in the orders of the section bosses.

Along with this help, frequently for fulfilling the plan they simply employ an additional bonus paid to the workers from the material incentive fund. The use of this measure leads to a situation where wages for the fulfilling of the same work under artificially created difficult conditions significantly exceed the ordinary. The amount of additional payment from the material incentive fund per worker reaches 500-600 rubles a year. Moreover, the administration grants the workers leave for the overtime worked.

Many of those who have had to work temporarily in "hotspots" feel that the reasons for the poor work done by the subdivisions lies not only in the shortcomings of outside support. Some 46 percent noted that the maintaining of the bottlenecks is aided by the interest in "gratis" labor for a portion of the outside assistants as well as the systematic surpayments from the material incentive fund for the "shock" work at the month's end.

At present, the basic way for converting to the collective form of the organization of labor and wages is to create new brigades. But the research has shown that only in a small portion of the brigades are the principles of truly collective labor fully carried out and in addition the very process of setting up the brigades is occurring unacceptably slowly. For this reason, it is essential to seek out other ways, in particular, improve the wage regulations for production workers.

The standard wage regulation makes it possible to figure the bonus considering the fulfillment of not only the individual, but also the collective production quota by a section and even a shop. In addition there is the experience of redistributing bonuses within the primary production collectives depending upon the quality of labor of the members.

During the first stage of introducing new regulations, it is possible to provide that each worker will receive a small portion of the bonus, for example 10 percent, for the fulfillment of the state plan by the collective. Subsequently, its amount should constantly rise year by year. Over the long run the fulfillment of the state plan by the primary production collective should become a required condition for the payment of bonuses not only to the foremen, but to each of the workers. Then all members of the collective will be concerned not only for fulfilling their own, but also the collective quota. In parallel the workers must be more widely involved in labor norming, in distributing wages and in solving other production questions.

In Irkutsk Oblast, the radio receiver plant was the first to introduce in 1980 a wage regulation for production workers which envisaged the payment of 12-15 percent of the bonus only under the condition of the fulfillment of the plan by the primary production collective. The same percentage of the bonus is paid

for the collective's fulfillment of the quota for reducing labor intensiveness. Moreover, the regulation provides an opportunity to commend outstanding workers by increasing their bonus up to 25 percent as well as by a surpayment for professional skill. But still the basic portion of the bonus is paid depending upon the fulfillment of the individual quota.

Research has shown how great are the opportunities for the collective forms of the organization and encouragement of labor and what great efforts must be made in order to more fully utilize them.

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PLANT SOCIOLOGISTS COMMENT ON COLLEAGUE'S ARTICLE

Novosibirsk EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 7, Jul 82 (signed to press 26 May 82) pp 140-142

[Reader replies to the article by V. A. Skripov: "Notes of a Plant Sociologist" published in EKO, No 11, 1981]

[Text] To Multiply Forces

By Yu. A. Barklyanskiy, chief of the Sociology Department at the Norilsk Mining-Metallurgical Combine imeni A. P. Zavenyagin

In our sociology department there are 13 co-workers. To judge from the existing situation at other enterprises, this is quite a few. But if one considers the 100,000 employees of the combine, this is not enough. The combine must solve constantly new and evermore complicated problems. One of them is the transition to the intensive path of development, the formulating of an appropriate personnel policy, the elaboration of comprehensive specific programs for managing the labor resources and so forth. The combine is experiencing an acute need for new personnel including systems analysts, sociologist-economists, and specialists in job recruitment. We intend to organize a sociological laboratory and a center for vocational guidance, recruitment and adaptation at the combine. Much has already been done for this.

The Past Stage

By Candidate of Philosophical Sciences A. K. Zaytsev, chief of the Sociological Research Department at KamAZ [Kama Motor Vehicle Plant], Naberezhnyye Chelny

I have known V. A. Skripov for a long time and well. I have read and re-read his "Notes." I assembled my co-workers, we argued for a long time and reached the unanimous conclusion that it is not advisable to discuss this article with the participation of the plant leaders or the party committee members. The sociologist in it is somewhat primitive, a certain free searcher for problems. The time of such sociologists, in our view, is long past. New questions have arisen, new difficulties have come up, as yet there are no answers to them and probably will not be if, as V. A. Skripov assumes, the sociologist will work alone.

I would like to tell in greater detail about the work done by the KamAZ sociological service.

Far to Specialization

By A. L. Novokhatskiy, sociologist from Severodonetsk

Of all the topics touched upon by V. A. Skripov, I would take up one. I feel his proposal that instead of universals there should be an army of sociologists specialized in a certain sphere of social administration is inacceptable. If one adopts the standard accepted in the United States of 1 for every 300 workers, the Soviet national economy would need a little more than a half million sociologists. When would we be able to train so many? In addition, in spreading out the specialists, how could a system of coordination be organized and duplication would be inevitable.

It is obviously more advisable to set up either sectorial or intersectorial (territorial) sociological centers which would comprehensively study a broad range of social problems. Then it would be sufficient to have one sociologist directly at an enterprise and he would introduce the center's studies. Thus, it would be possible to concentrate the highly skilled specialists. Of course, it is essential to train the personnel and introduce courses on sociology and psychology in all the engineering VUZes.

An Uncontrollable Innovation

By V. N. Rybal'chenko, sociologist at a Vilnius Production Association

The "sociologization" of production obviously is not conceived of as a controllable innovation. Sociologists have been and are being incorporated in the enterprise management structure spontaneously, usually at the request and in some instances by the whim of the leaders. Initially a model was lacking and there was no clear notion of the role, functions and tasks of an industrial sociologist (and psychologist). The principle was in effect: let us introduce and then take a look, perhaps things will not be so bad! The principle is clearly unscientific. Hence, many of the problems which V. A. Skripov correctly writes about.

Unfortunately, the trial and error period is obviously being drawn out. The services which are working in accord with a systems approach and are able to concentrate on and resolve important problems are rare oases. Such effective forms of social administration are not being developed as consulting and expert evaluation of labor collectives for social problems and carried out by centralized groups of specialists (on the level of the main administration, the center for NOT [scientific organization of labor] and procedural departments).

The isolation of sociologists and poor support from the ministries and scientific institutions are largely to be explained by the fact that the economy and organization of enterprises are not sufficiently aimed at using the "human factor" of production and they disregard it. For example, the scarcity of

personnel not only impels the managers to alter work methods, but further strengthens voluntarism in the solving of personnel problems. Thus, instead of improving the quality of hiring and creating conditions for stabilization more and more often there is "omnivorous" selection in the form of it is better to have the worst worker than none at all!

Along with my colleagues I hope that the discussion of our needs in the press will not end with a mere exchange of opinions, but will finally lead to the elaboration of serious recommendations by the USSR State Committee for Labor and Social Problems and the sectorial ministries on the problems of plant sociology.

Another Extension is Required

By A. P. Shitov, senior sociologist at the Profnastil Plant in Chelyabinsk

In addition to myself, Skripov's article was read by the plant leaders. As a whole our opinions coincided. The publications of recent years have basically been devoted to the concerns of a sociologist at an enterprise and we would like to become acquainted with a generalizing of the work done by an industrial sociologist.

In our opinion, the time has come for articles on the pages of EKO written by representatives of the Gosplan, the State Committee for Labor and Social Problems and the AUCCTU. These authors from their own general state positions could have their say on the questions of social planning and the development of sociological services in industry.

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SOCIOLOGIST CITES PROFESSION'S NEED TO BE MORE PRACTICAL

Novosibirsk EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 7, Jul 82 (signed to press 26 May 82) pp 143-145

[Article by L. K. Dudchenko, head of the group for the social problems of management at the All-Union Scientific Research and Design Institute for Industrial Asbestos Products in Yaroslavl: "To Eliminate the Causes and Not the Consequences"]

[Text] I am a sociologist. I do not feel that this profession is better than others, but I have found my calling precisely in it. Novices, particularly those who have been at least once at a plant are drawn to its humanistic focus. It helps people by disclosing shortcomings in production life and directing the leadership at eliminating them; it gives people an opportunity to say their piece and to recognize their misfortunes and problems; it teaches effective methods for working, training and recreation.

Initially this focus makes it possible to tolerate inconveniences. However, later on one begins to feel somewhat awkward as much that you have so scrupulously sought out, analyzed and described is not needed by the administration. It has other goals.

It is a good thing to have a prospect, clear for several years to come as well as operational plans for the future year. Who will give this prospect? No one because the administration does not have a sociological and psychological education and cannot imagine what it could actually receive from a sociologist. As V. A. Skripov correctly writes, as yet there is no common language. Each person sees the production situation in his own way. Hence, dear specialist, take up the general methods, go where the practical workers do not go and bring them what they need!

Do plant psychologists have a goal? Yes, in the form of a list of research planned for the next few years. What has dictated the topics? No, not by an excitement over the future problems of the plant, as an optimistic reader might assume but rather by the existing opportunities and the present-day (that is, actually already yesterday's) problems. Can our work be planned more soundly?

Theoretically, yes. In practical terms, at the present day and with the present level of soundness and accuracy of the plans and the organization of the work, no.

Sociologists are not yet accustomed to working quickly and soundly. Either it is done quickly, even making rash judgments in order not to be called an idler. Or 6 months for the program, 6 months for collecting and processing the information and so forth. There is no method for teaching sociologists efficient work.

At conferences and meetings of plant psychologists and sociologists one customarily hears complaints that the enterprise administration does not provide all the necessary conditions including personnel, space, office equipment and attention. But rarely one hears complaints about one's own lack of organization or own inability. Even if such complaints are heard they do not go any farther than requests to the superior bodies to organize us, to instruct us, to unify us. Even within one sector the sociologists are virtually unfamiliar with the work of their colleagues. It cannot be said that they have no opportunity for such familiarization as it is merely a question of traveling to a related enterprise. Inactive on this level are the organizations which should provide the contacts such as the Sociological Association, the Institute for Sociological Research, the Psychology Institute and the IPK [institute for advanced training]; the sociologists and psychologists themselves are also idle. Must we wait until the situation changes and the respected organizations pay attention to the needs of the specialists from the sticks, that is, the basic mass of sociologists?

And they wait, inventing bicycles, conducting mirror image research on the reasons of personnel turnover and disciplinary infractions, they lose their sense of a future, becoming swamped in daily production routine and bit by bit falling behind the express train of advanced science. And here their former aspirations gently die and the former zealot adapts to the momentary needs of production and no longer thinks how to make mankind happier in the form of the plant collective. Many specialists retrain, others become disillusioned and gradually acquire a distaste for their work.

In encountering misunderstanding, our sociologist responds differently: he hangs his head, becomes disappointed in his profession and its possibilities, he ceases to be conscientious in his work or moves to a different area. As a rule, he is mortally offended by the organization which disregards his advice. But should he be? Let us imagine a physician who becomes insulted when the patient who has turned to him for advice goes to a hospital or beyond. Yes, it is a physician's duty to demand that his advice be carried out for the sake of the patient's health. But the patient also has the right to disregard this advice. There are as many reactions as there are people and a rather widespread one is the reaction of rejection. There are as many reactions as there are organizations and the most frequent one is the reaction of pulling away.

We have worked out a mass of clever methods for forcing an organization to do what we recommend. And we often do force this. But as soon as we let the situation out of our eye and lift the control, our instructions are turned into a formality and everything falls back into place. Here one does not merely become anxious but is ready to curse everything in anger and impotence. What is the solution?

An organization is a very complex conglomerate of the technical, economic, technological and the social. From this entirety we pull out our own "subject" and seek in it (and only in it, as a rule) the answer to the problems which beset the entire organization. We divide and disect this living thing, we prepare it and then put it back together in an optimum manner, so we feel, but it in our own manner, in a specific scientific way, does not live. How could it be otherwise? Certainly we, being in the very maw of a scientific subject, cease to feel this living integrity of an organization and hence our operations are artificial and arbitrary from the viewpoint of living reality. Hence it happens that an intelligent sociologist arrives at the need to comprehensively approach his practical work, but does not know how to achieve this. He has not been taught. The most patient and conscientious endeavor to teach themselves but unsuccessfully. And there are few of these.

We feel that the development of our profession will be carried out by developing the methods underlying the active work of the very members of the organization and aimed at solving its problems, certainly with the help of specialists. These methods will gradually become part of our practice and include both consulting activities, the collective taking of decisons as well as innovation, organizational development and situational management. The creative combining of the experience of practical workers and the knowledge of sociologists is already effective. This is a complex path requiring a radical reorganization in the awareness and professional abilities of the specialists and leaders of the organization and this requires patience and time. It is essential to carefully and thoughtfully prepare the situation as well as the conditions on the basis of which one or another effect on the organization is possible. Not feverish attempts to solve the arising problems, but rather the gradual elimination of the conditions under which they arose. We must remove the causes and not the consequences. This is not a new idea, however it is a constantly forgotten one in our very difficult work.

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ECONOMICS PROFESSOR DEFINES ROLE OF SOCIOLOGISTS

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[Article by Doctor of Economic Sciences, Prof G. N. Cherkasov from the Leningrad Financial and Economics Institute imeni N. A. Voznesenskiy: "The Instructor's Opinion"]

[Text] Without going into a detailed analysis of the article [by V. A. Skripov], the timeliness of which is indisputable, I would like to take up certain debatable points. One of them is what should a sociologist be at an enterprise, a universalist or a narrow specialist in an individual area of sociological work. In our view, here two types of activities are confused: research and operations.

In actuality, it is impossible to be equally good today with the compiling of a social development plan of an enterprise and then tomorrow study the religiousness of the employees. As for the constantly repeating work of introducing social developments into practice, here in actuality there must be specialization. The activities of a social researcher require a broad systematic view and a knowledge of the development patterns of society, the specific features of human nature and the laws of social organization. In rare instances, the clients--the enterprise leaders--can correctly formulate the problem and precisely set the research task. In a majority of instances this is done by the sociologist himself. But the nature of social problems is such that universal knowledge is required for their correct diagnosis.

As for the question of where and how the sociologists should be trained for industrial needs, one can scarcely agree with the decision to give a sociological specialization as an extension of the basic profession of a lawyer, economist, production engineer and so forth.

Of course, sociological knowledge is essential for lawyers, economists and engineers. This can be seen from the difficulties which young specialists encounter due to a lack of elementary knowledge about human psychology and the particular features of an organization. But it is still essential to have specialists for whom sociology is the basic profession at an enterprise. Just as all engineering and technical workers need a knowledge of the bases of economics, this still does not replace the special economic service staffed with professional economists.

There can be a varying approach to the basic education of a professional practicing sociologist. As yet there is no such specialty in the VUZ course lists, and for this reason a sociological specialization is carried out on the basis of different specialties. Our extended (14-year) experience in resolving this problem in an economic VUZ indicates that one of the most promising figures in applied sociology can be the sociologist-economist. For example, for sociological activities within an industrial enterprise, very suitable is a specialist trained on the basis of basic knowledge in the area of economics and the scientific organization of labor. Work in the area of planning social development on a sectorial and regional level, in our opinion, is best carried out by a sociologist who possesses good knowledge in a broad range of national economic planning problems.

Related to training is a determining of the place of the sociologist and sociological service in the enterprise's structure. As practice shows, a significant number of an enterprise's special services needs a sociologist and social management and at the same time no service solves this problem with sufficient clarity. As a rule, either the system of social knowledge is broadened for the workers in all the enterprise's social services which are in one way or another involved with social management; or matrix management methods are introduced with the functional subordination of the sociologist to the various services depending upon the level and specific nature of the problems to be solved; or sociological work is coordinated and the position of assistant director for social questions is introduced.

None of the given points in and of themselves can cause argument and as a whole they have the ring of a proposal for organizing a comprehensive sociological service at an enterprise. At present, the role of the social factors in economic development is increasing sharply and we cannot economize further in the sociological services. It is essential to intensify their activities for only they are capable of professionally solving many social development problems in the collectives.

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PARTICIPANTS AT SOCIOLOGISTS' CONFERENCE DISCUSS PROFESSION

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[Unattributed conference report: "Scarcely Off Dead Center"]

[Text] In January 1981, the Third Urals Sociological Readings were held in Orenburg. These were a regular forum for the Urals sociologists to which were invited specialists from other regions of the nation. At one of the sessions, the position of an industrial sociologist was discussed. Below we give statements by the participants.

Doctor of Philosophical Sciences L. N. Kogan, chairman of the Urals Division of the Soviet Sociological Association of the USSR Academy of Sciences (Sverdlovsk): Industrial sociology has been active for more than 10 years in the Urals. Several laboratories have been organized at enterprises and the largest is at the Perm Telephone Plant; there are a number of sociological institutions also under the VUZes. The journal SOTSIOLOGISHECKIYE ISSLEDOVANIYA regularly publishes articles on this sector of sociological science. The training of specialists is also underway and three persons from Sverdlovsk in 1981 became candidates of sciences. The two full-time and correspondence schools in Sverdlovsk trained 200 graduates. There are also schools in Chelyabinsk and Zlatoust; the Urals Club for Scientific-Technical Propaganda also holds special courses.

It cannot be said that sociologists are sitting doing nothing. But there still are many problems related to their very status at the enterprise. For example, under whom should the plant sociologist be? Whatever service he may be in, the OK [personnel department], PEO [economic planning department], ONOT [department for the scientific organization of labor], OPT [unknown department] and OTIZ [department for labor and wages], he is rarely directly the concern of the director or the party committee (as is the case for example, at the Middle Urals Copper Smelting Plant). And at times, the sociologist is concerned with things miles away from sociology. This is understandable as it is an ambiguous situation and one does what one is told.

A serious failing is the lack of long-range planning. Often a sociologist does not know what he will be doing tomorrow, let alone at such dates as a month or year from now. The decisions are taken hurriedly and at times you

would only find them in KROKODIL [a humor magazine]. Poor qualifications and not enough time for drawing up programs of serious research.

Industrial sociologists are being trained in the nation by just four specialized sociological chairs which, as strange as it may seem, have not yet turned out a single publication. For this reason, sociology is predominantly the concern of philologists, historians, pedagogists and lawyers. Information on the work of sociologists has been poorly organized and the scientific institutions do little to help them. These are some of the current problems in industrial sociology.

Candidate of philosophical sciences Ye. P. Starodubtseva, chief of the Department for Sociological Research at the Uralelektrotyazhmash [Urals Heavy Electrical Machinery] Production Association (Sverdlovsk): All the questions of the sociological services should be settled on the ministry level, as is the case, for example, in the Ministry of Electrical Equipment Industry. Thus, one can eliminate the diversity, the procedures are uniform and the research results are comparable. Favorable conditions are also created for studying. Seminars have already been held in Moscow, Kharkov and Novosibirsk.

The Uraleletrotyazhmash Association has a long-range plan for sociological research and it includes the unified topic adopted on the ministry level. The plan was approved after discussion by the general director with the participation of the party committee representatives from the association and the plants.

Much is debated about the nature of activities for the industrial sociologists. What should he be: a researcher, introducer or educator? The need to act in all these capacities stems naturally from our tasks. It is essential to study, to forecast, to give lectures, introduce and experiment. The ideological planner in an association is a rostrum where we can share our ideas and announce certain results. We are conducting a 12-hour course for the shop foremen and chiefs. In a word, we are working.

V. I. Gerchikov, chief of the Laboratory for Labor Sociology and Psychophysiology at the Perm Telephone Plant: Over the dozen years of experience one would feel that our problems are eternal. For this reason it is essential to rank them and likewise rank the complexity of the solutions. Why in industrial psychology have things almost come to a halt, regardless that the Goskomtrud [State Committee for Labor and Social Problems] has begun to be called "for labor and social problems" and a sector has been formed consisting of four persons for social planning and plant psychology? The whole question is, in the first place, that neither the social sciences are ready or the personnel trained. For instance, the sociologist is to be put under the deputy leader for personnel. But will one find enough sociologists for the 100 deputy chiefs of the personnel administrations of the ministries, the 1,000 deputy chiefs or the main administrations or the more than 40,000 enterprises? And are all these deputies ready to take on the sociologist?

At present sociologists can be divided into sectorial and plant, planners and managers. The bureau for socioeconomic analysis and the planning of social development is better given over to the economists and the solving of specific social problems to the personnel department.

Decisions are required on a national level, in particular for the training of management personnel. Then it would be possible to make a supplement "for social development" to their positions. For example, in 1974, in the ministry we "forced through" engineer rates for the personnel department, but there were no persons even at the increased rates. The chiefs of the personnel departments do not want to take engineers as their training is higher, but what beyond that? It is essential to develop procedural leadership in the sector and in the territory; standard procedures and information bulletins must be put out. It is also advisable in the sectors to create social planning departments headed by the chief sociologist of a sector. In our ministry such orders have already been issued.

Candidate of Technical Sciences A. M. Rozenberg (Izhevsk): The problems have become so acute that there is no further progress possible. The work of individual industrial sociologists is carried out on the most rudimentary level. They must be trained and with a basic sociological education. With initiative from below it is essential to set up centers for coordination and procedural aid to the sociologists.

I. T. Ryabinskiy, chief of the Sociology Department at the Plant imeni D. M. Karbyshev (Kurgan): Personally I do not have any problems. I am under the director, I have a great deal to do and nothing to complain about, but can see that interest in sociology is dropping both among the leaders and the party organizations. The number of sociologists is declining.

Doctor of Philosophical Sciences Z. I. Faynburg, chief of the chair at Perm Polytechnical Institute: I feel that the work done by sociologists at the Norilsk Mining-Metallurgical Combine imeni A. P. Zavanyagin can serve as the model. They are under the deputy director for personnel and social development. There is a sociology department at the combine and sociologists at the enterprises. The results are obvious, too. For aiding the plant sociologists it is essential to set up scientific and procedural laboratories under the VUZes and the scientific research institutes. However, here the problem arises of cost accounting work in the VUZes.

B. S. Model', the motor transport enterprise (Sverdlovsk): There is no need to dramatize the fact that we are not being trained. Are there few practicing workers in other professions? The situation is not so bad. For example, NOT [The Scientific Organization of Labor] does not have what the sociologists possess: the Soviet Sociological Association of the USSR Academy of Sciences, the journal SOTSIOLOGICHESKIYE ISSLEDOVANIYA and so forth. Working not in one's specialty? From 30 to 60 percent of the engineers and technicians complain of the same thing. It is not worth regretting the time either for compiling notes as they also teach something. Is it really a problem not to be under the director? If one is not in contact with all the leaders of the subdivisions, then a director's sponsorship is of no help and any director's order can fail. The moaning is over the fact that we are not given a procedure which is proof of the reticence to work. Academic sociology will never descend to the level of plant and hence its methods must be adapted to the specific conditions. I do not support many of the complaints I have heard here.

A. P. Gavrilov, chief of the Sociology Department at the Radiator Experimental-Production Association (Orenburg): The plant sociological services are not required in their present form. Sociological research requires great expenditures, it lasts for years and production needs results now. It would be more advisable to set up intersectorial centers. Then work would not be lacking for five or six sociologists at a plant. General questions could be studied using standard procedures from the procedural banks. Just like the magazine RADIO does: it reproduces and prints a complete diagram.

In conclusion, the leader of the debate L. N. Kogan pointed out: "I support the thesis that one should not wait for charity from anyone. Sociology has already gone through the period when there was neither procedure nor manuals. There are coordination centers in Sverdlovsk and Chelyabinsk. They work on volunteer bases and for this reason I would like to support the idea of the broader involvement of the trade unions in coordination. Again and again the question of the training of sociologists must be posed. But the main thing one must do more work oneself.

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LOW QUALITY, SMALL ASSORTMENT OF CONSUMER GOODS CRITICIZED

Novosibirsk EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 7, Jul 82 (signed to press 26 May 82) pp 152-161

[Article by Prof Ya. L. Orlov, head of the chair at the Correspondence Institute for Soviet Trade in Moscow: "Concern for the Consumer--The Basis of the Partnership Between Industry and Trade"]

[Text] Once the director of a large footwear combine in a terse form described his position thus: "Trade tortured us with penalties!" And his conclusion was: "It was advantageous for it. The trade workers, so to speak, live off of penalties"....

Is this the case?

Here is the most general fact: out of the inspected goods as an average, one out of every ten garments, every eighth pair of shoes and every tenth meter of fabric are returned to the manufacturers as not meeting the requirements of the standards. Let us limit ourselves to the facts reflecting the harshest measures applied to enterprises which systematically deliver inferior products, namely the switching over to special commodity acceptance conditions as well as the temporary halting of acceptance.

In the first half of 1981, the state trade inspectorates under the Union republic ministries of trade halted the acceptance of goods from industry 490 times and halted the acceptance of goods by trade organizations 1,527 times. In addition to this, the experts from the commodity expertise bureaus, upon request, rejected and reduced in quality many scores of millions of rubles worth of consumer goods.

An analysis of the operations at industrial enterprises has shown that the output of poor quality goods has been a consequence of the following basic factors:

1) The violating of production discipline in all the stages of production;

2) Poor equipping with modern equipment and sometimes its unsatisfactory use;

3) Poor quality raw products and auxiliary material;

4) Unrhythmical operation of the factories (at the month's end the proportional amount of poor quality goods increases significantly);

5) The weakness of internal inspection, in particular, the OTK [department of technical inspection] services and reduced responsibility both of the enterprise leaders and collectives.

The ministry of light industry and the staffs of certain other sectors, in a drive for quantity and volume indicators, still have little influence on commodity assortment and quality and are far from always considerate of the needs of the population. For example, at some garment mills, there is little supervision of the work of the cutting shop, the cuttings deviate from the design lines, laboratories have not been organized for testing the physicomechanical properties and dye fastness of the fabrics, the moisture and heat treating of individual articles is unsatisfactory and so forth.

Unfortunately, there have been numerous instances when all the work of eliminating production defects in returned articles is reduced by the mills to repackaging them and the goods which do not meet the standards and sample examples are returned to trade, certainly now sent to a different trade organization and are not entered as rejects in the manufacturer's documents.

Do the manufacturers of defective goods frequently find solace among undemanding workers? Yes, this does happen. As an example, I will mention one supplier, the Voroshilovgrad Production Association of Footwear Enterprises. The Pervomayskiy Universal Interrayon Base receives footwear by rail and truck from Voroshilovgrad. On the return trip, the transport is often loaded with the same goods. In 1980, 16 lots of footwear with a total value of over 80,000 rubles were rejected and returned. A check established that, in particular, a portion of the delivered boots had previously been sent out to the base, had been rejected and returned to the manufacturers. This could be seen from the stamp of the Nikolayev commodity experts bureau. On certain articles was the stamp of the commodity expert bureaus from other oblasts of the Ukraine. Here the defects which were established at one time by experts were not corrected. The articles with unglued soles, poorly attached heels and a number of other flagrant deviations from the standard were returned to the manufacturers by the base.

We would point out that in the reports on the fulfillment of the plan quotas by the association there was not a single word about these rejects!

Such practices have become possible due to the lack of proper exactingness by the trade workers who prefer a poorer world to a good fight. Precisely the lack of principles on the part of certain workers has contributed to a situation where the output of poor quality footwear at the association has become a chronic phenomenon.

The Decree of the CPSU Central Committee and the USSR Council of Ministers "On Measures to Further Develop Trade and Improve Trade Services for the Population" in the 11th Five-Year Plan has pointed out that the trade organizations "still do not sufficiently influence the formation of the production plans for

consumer goods and do not show proper tenacity so that the planning of their output is firmly dependent upon trade and upon the consumer; frequently they tolerate instances of reducing the output of goods needed by the public and violations of state discipline in carrying out the contractual obligations for their delivery."[1]

Economic law makes it clear that the factories are responsible not when they generally produce poor-quality goods, but rather when they are guilty of this. Before imposing sanctions or collecting fines, the appropriate organizations should carefully check whether the factory had an opportunity to produce a good product. It turns out that in a majority of instances it did.

But how do the wholesale organizations use the received fines?

Since the first year of the 9th Five-Year Plan the wholesale organizations which have been converted to the new conditions of planning and economic incentive pay 95 percent of the difference between the fines (including penalties and forfeits) received and paid to the state budgets of the Union republics. Only 5 percent remains at the disposal of the bases and is transferred to their funds: one-half of this amount is paid to the trade development fund and one-quarter can be used as a material incentive for the workers. The portion of the penalties remaining in the wholesale unit does not even cover the expenditures! But even if it did compensate there still would not be any gain as the lack of any goods in trade cannot be compensated for by monetary receipts from defaulting partners as it is possible to sell goods, but not the penalties....

It must be pointed out that trade generally resorts rarely to material penalties. Its desire not to quarrel with suppliers cannot be justified, but it inevitably causes alarm over how it can be replaced in order to strengthen the commodity turnover plan. Certainly almost everything produced by the plants and factories has long been incorporated in the commodity stocks for the commodity turnover of the stores and bases. Hence a "memorandum" from trade workers is a rather rare phenomenon and the tone is always beseeching and placating. However, it is impossible to justify relations based on the principle of a "poorer world is better than a good quarrel" for the simple reason that these give rise to both surpluses and scarcity.

Certain publications have asserted: what sense does it make for the shop workers to waste time on advertising a good, on talking with a customer if 20 percent of its value can be obtained from the enterprise for returning the good for correction, while the store's profit receives only the trade rebate from the sale of this good?[2] The following calculation can be given here: if a customer buys an overcoat or a suit for 200 rubles, then the store gains just 12 rubles from this, but if the thing is returned to the manufacturer, then the store will receive 40 rubles! Yes, in certain instances this calculation is

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[1] PRAVDA, 23 January 1982.

[2] Yevgeniy Spiridonov, "Are the Quality Filters Dependable?" EKO, No 6, 1980.

correct (if by the author's "profit" and "gain" one understands the trade rebate which is designed to cover the overhead and a small portion for forming profit), but is absurd to speak of this as a mass trend. In returning goods, the store jeopardizes the fulfillment of the commodity turnover plan, the indicator which determines the well being of all the workers. In addition it bears expenditures and does not receive the trade rebate.

Let us examine the retail trade losses in somewhat greater detail.

A trade enterprise, having returned an inferior quality good to the supplier, is unable to fill in the breach for fulfilling the commodity turnover plan and obtaining the trade rebate for covering at least the overhead and there is no question of any profit or bonus. The nonfulfillment of the commodity turnover plan is fraught with a shortage of own working capital and reduced economic incentive funds. All of this creates financial difficulties and leads to complications in obtaining bank credits. In this instance the bank demands increased interest rates for extending credits for temporary needs (it is 6 percent per annum instead of 2) and demands a guarantee from the superior organization. The procedure of relationships between trade and the budget over the questions of profit payments is such that the overfulfillment of the commodity turnover plan and profit in subsequent months cannot make up the lack of own working assets formed in previous months. Moreover, a retail trade organization pays to the budget the entire difference between the received and paid penalties.

Thus, a retail trade enterprise which has not allowed the sale of goods manufactured in violation of the requirements of the State Standards stands to bear many losses without having sources to cover them. Only the additional receipt of goods from other suppliers and thus the fulfillment of the commodity turnover plan and, consequently, the profit plan can make up for the designnated losses. The wholesale trade organizations are approximately in the same situation. Moreover, the salaries of the leading workers, engineers, technicians and other specialists at the trade organizations do not depend upon the penalties sought for a violation of delivery conditions.

But, undoubtedly, the main negative consequence from the return of defective goods is interruptions in trade and the unsatisfied demand of the public. Frequently, this leads to a situation where the trade enterprises in an effort to fulfill the commodity turnover plan which determines their economic and financial well being lower the demands on the manufacturers and accept inferior quality goods from them.

How does the purchaser respond to product quality as supposedly both production and trade are working for his sake? He is a sovereign entity and cannot be ordered to purchase what he does not like and he "votes" with his ruble: good, fashionable commodities are purchased and the inferior ones rejected.

The essential discrepancy in a portion of the assortment of goods delivered by industry to the trade orders and the public's demand and the disparity of commodity quality to customer requirements are visible, as they say, to the naked eye: many goods pile up in trade which are not wanted and a significant portion of these is articles from light industry enterprises. Even more specificly clothing and footwear. The main source for the formation of unsold goods in

trade is the increased production volume without proper consideration of demand and the increased requirements of the customer for the assortment and quality of the goods. These commodities are "treated" by price reductions, but at the expense of the budget and trade and not of the producer.

There must be a decisive struggle against the infamous practice of letting off undisciplined suppliers. The illegal release from liability not only undermines the authority of the contract and leagl means, but also the very principles of cost accounting. It is essential to increase supervision by the ministries and departments for the fulfillment of obligations by the enterprises and place claims against the violators of contractual conditions.

A judgment of a commodity by the purchaser is the most important and main thing. The well being of both the factory and the store should depend precisely upon it. With the aid of economic and legal measures, we must strengthen ruble control not only over production, but also over sales and increase the cost accounting responsibility of both industry and trade to the customer. A penalty is an important level for such supervision, but in no way an end in itself. Society is interested in having the demands of the public and the national economy be more and more fully satisfied and the economic and legal means should contribute to this.

Recently, more and more frequently people have spoken and written about the full liability of the manufacturing enterprise directly to the purchaser. Who can give an objective evaluation of a commodity? Certainly none of the numerous organizations in nonproduction supervision assumes responsibility for that certification which it gives the tested product as articles which have been graded "good" at the enterprise even by the republic state inspectorate for trade and product quality of the appropriate trade ministry can be tested and returned by other inspectors. If even after repeated quality sanctioning the purchaser discovers defects in a commodity and returns it to the store, the complaint ultimately must be satisfied not by the trade organization, but rather the manufacturing enterprise. The final conclusion is often formulated in the form of a question: Is it not better to entrust responsibility to the consumer for the quality of goods to the enterprise?

This might be proposed, but this idea is not so easy to achieve in practice. This is the first point. Secondly, it is advisable? It would be necessary to remove the trade workers not only from product quality control, but also from responsibility to the purchaser.

Possibly this could be assumed if not by the enterprises themselves, then by their firm stores? The latter are not only "related" and closer to the producer, but most probably would not penalize "their own kind." As they say, they hold the cards for carrying out such an experiment. It would be instructive if, for example, the Orbita firm store of the Ministry of Communications Equipment Industry itself received purchaser complaints on the guarantees for products which it handles.

Let us sum up. The basic mass of goods returned for redoing and reduced in grade by inspectors is a consequence of production defects and raw material

defects. From the total volume of rejected products, over four-fifths of the textiles and garments, more than nine-tenths of the knitwear and hosiery and over seven-tenths of the leather footwear were returned for correction and reduced in grade for these reasons. And this was after the product inspection by the enterprise technical inspection department. Under these conditions it is impossible to speak about eliminating the trade workers from product quality control. In principle it is not essential for the articles of those enterprises which value the honor of their mark and constantly deliver good quality commodities.

At the same time, the present system of product quality control is also superimposed on society and it employs around 1 million specialists. It would be advisable to concentrate control directly at the point of production and without fail detect the rejects before dispatching the products and paying the accounts. Undoubtedly the most significant and effective is the experience of the Moscow Sokol Production Association which was described at the November (1981) Plenum of the CPSU Central Committee. For a long time many Moscow stores have been receiving men's coats from this association without preliminary quality inspection by the merchandise experts. It is noteworthy that no purchaser has complained to the stores on the quality of clothing from this enterprise. The 26 enterprise standards ensure a good reputation for the goods with the "Sokol" mark. Interoperation inspection introduced at the association helps to promptly detect and eliminate flaws.

The association's workers combine great exactingness for themselves with an equal measure of exactingness upon the suppliers of raw products and materials. A special enterprise standard has established a procedure for incoming inspection. All the incoming textiles are inspected for strength, crease-resistance and conformity to standards. The fulfillment of the delivery contract by the textile workers is checked for all positions, including patterns and colors of the textiles. In their work with their partners, the "Sokol" garment workers do not limit themselves to just inspections. Many important questions are settled within the cooperation contracts.

The instructive "Sokol" experience opens up a real prospect for improving ties between trade and production.

The main principle which must be followed in the relationships between production and trade is concern for the needs of the public. Reciprocal exactingness should be the basis for their professional partnership.

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EFFECTIVE USE OF RECREATIONAL FACILITIES URGED

Novosibirsk EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 7, Jul 82 (signed to press 26 May 82) pp 162-171

[Article published under the heading: "Let Us Discuss Problems of Regional Planning" by Candidate of Economic Sciences P. I. Taov, deputy chairman of the Council of Ministers of the Kabardino-Balkar ASSR and chairman of the Kabardino-Balkar ASSR Gosplan in Nalchik: "Comprehensive Planning for Recreational Resources"]

[Text] [Editor's Introduction] In issue No 12 of 1981, with the article by Doctor of Economic Sciences R. I. Shniper, EKO commenced a discussion of the urgent questions of regional planning and management. Let us briefly recall the content of this article. An enterprise operates not in an airless space. The formation and use of labor resources, the production consumption of land, water, forest and other natural resources, the development of construction facilities, the implementation of conservation measures, the extraction of an aggregate effect from decisions of an intersectorial nature and a rise in the material and spiritual standard of living of the Soviet people--all of this occurs in a concrete situation of one or another region and has a substantial impact upon the efficiency of industrial production. The article's author was reflecting on what planning and management should be in a region.

In issue No 4 of 1982, the discussion was continued. The articles by A. N. Loginov, N. S. Sheyko and P. L. Morozov took up the general plan of a city and the participation of the industrial sectors in it and the measures to strengthen the oblast and city planning departments. Examples were given characterizing the present state of the relationships between the industrial enterprises and city authorities. Now we are offering for the readers' attention new articles on the problems of regional planning and management.

Among the problems of regional planning and management, those of the efficient use of recreational resources are becoming evermore urgently felt. The well-known national resorts, the load factor of which is increasing year by year,

are being joined by resorts of interrepublic, republic and local importance; tourism is developing, national parks are appearing, the recreational zones are being expanded in cities and so forth.

Each year, the population spends 25 billion rubles on purchasing recreational goods and for services in the recreational sphere. Around 60 percent of the nation's population spends vacations and leaves in sanitoriums, vacation homes, tourist bases, in Pioneer camps, in organized and independent trips and hikes. Some 13-14 billion rubles are spent every year for these purposes alone. The share of expenditures for food and nonfood items in the actual consumption structure has shown a tendency to decline while expenditures for services, including for organized recreation, have been growing rapidly.

The increased load on recreational resources is a phenomenon noticed in all industrially developed nations and is caused by changes in the nature of labor, by increased nervous strain, by the deterioration in living conditions, by the accelerated pace of life and so forth. The growth rate of average life expectancy in all developed nations has declined. The successes of medicine in combating the so-called diseases of civilization, the improved housing conditions and the overall rise in material prosperity as yet cannot completely neutralize the negative influences of technical progress. But obviously in this instance the problem of the rational use of recreational resources and the management of them for the sake of maximum achieving of goals in supervising their reproduction remains urgent both on the national and on the regional levels. Let us examine the most urgent problems of managing recreational resources in the Kabardino-Balkar ASSR [KBASSR]. The KBASSR possesses unique natural recreational resources. The forested mountains, the diverse flora and fauna, the picturesque valleys, the monuments of popular architecture and national culture, the numerous sources of mineral waters (including unique ones), therapeutic muds and healthy climate are a very rich base for the development of resorts, tourism and mountain climbing.

In the republic regions have been organized with a definite recreational specialization: in Nalchik there is a balneological resort of national significance, in the Mount Elbrus Area there is a region of mountain climbing and alpine tourism and in the Blue Lakes area a tourist-excursion one. The recreational and tourism facilities can handle more than 14,000 persons simultaneously. Each year, the KBASSR is visited by 300,000 persons for recreational reasons including 130,000-140,000 persons at the balneological resort in Nalchik.

According to approximate estimates, each year the republic could take 500,000-600,000 vacationers, including 300,000 in the piedmont areas, 160,000 in the plains zone and 90,000 in the mountain valleys.

The demand of the nation's population for recreational facilities of varying specialty located in the southern regions of the European USSR, according to the estimates of the TsNII [Central Scientific Research Institute] for Resort Studies approaches 70-75 million persons, including up to 30 percent of this number in the area of the Northern Caucasus. Thus, supply and demand are not balanced and this circumstance requires definite measures in order over time to mitigate the apparent discrepancies and to protect the recreational resources against excessively intense use. At present, this problem is rather acute.

Insufficient control over recreational processes is fraught with serious negative consequences which ultimately threaten a deterioration in the qualities of the recreational resources. And here we do not mean their uneconomic use, the insufficient load on them and so forth. Of the 300,000 persons who each year take their vacations in the KBASSR, around 100,000 are unorganized vacationers. The exceeding of the actual load over the planned by 1.5-fold destabilizes the operation of the infrastructure facilities and worsens the recreational conditions for the visitors and the living conditions of the local inhabitants.

In addition to the planned tourists, a large number of independent tourists and uncontrolled hikers can be found in the recreational areas, particularly in the Mount Elbrus Area and the Blue Lakes. Each year this influx increases. In the Mount Elbrus Area it has already reached 2 million persons a year which is double the acceptable standard. Surveys made by the laboratory of the Stavropol Pedagogical Institute have established that on a summer Sunday, the Mount Elbrus Area is visited by 8,000-10,000 persons and the Blue Lakes by 5,000-6,000. Since the independent groups arriving for leisure are unsupervised, they often leave uprooted trees and brush, particularly the young vegetation, as well as tramped-down forest litter on the slopes. This causes the destruction (erosion) of the fertile soil layer. Moreover, the enormous flow of motor vehicles (over the summer more than 100,000 of them travel in both directions) pollutes the air basin of the Mount Elbrus Area and along with the smoke from boiler stacks causes a sharp decline in the biomass of nectar-bearing plants and leads to the exhaustion of populations of pollinating insects and anthills, without which the green belt cannot live and develop. Thus, the estimates for the future recreational traffic and a comparison of them with the possibilities of the mountain regions and the consequences caused by them show the need for their limitation and strict regulation.

The areas between settlements with their diverse topography, forests, meadows, glades, lakes, rivers, fauna, clean air and silence comprise the "fixed capital" of the recreational service. The solving of ecological and architectural layout questions in the area of recreation is impossible without utilizing the natural complexes of the intersettlement territories and this must be viewed as a form of economic exploitation of the natural resources. Like any area of utilizing natural resources, recreation and tourism should be based on a scientifically sound technology.

A clear example of a lack of scientifically sound technology could be the unsystematic construction of engineering works and utilities in the forested areas of the Mount Elbrus Area and due to which the trees and brush have suffered within a radius of 100-150 m. Each new building of a base, boarding house or hotel is equipped, as a rule, with its own boiler installation and for this reason further construction of such facilities in the Mount Elbrus Area inevitably entails increased pollution of the environment. Suffice it to say that over the 11th Five-Year Plan alone the SU-9 [construction administration] has received orders for erecting the second series of the Cheget Hotel, the public rooms of the Azau Hotel, a boiler house at Itkol Glade, the Cheget-III Cableway and other projects totaling around 2.7 million rubles. Construction is being continued on the collector and treatment facilities at the Elbrus mountain tourist region.

The recreational overloads on the mountain and valley pine forests of the Mount Elbrus Area in the near future will be complemented by the unfavorable climatic changes. According to the ecological forecast of the Alpine Geophysical Institute, over the coming 30-year period in the Elbrus Area a steady winter warming is expected (the mean January temperature will increase by 4-7° in comparison with the last decade) and a decline in both the winter and, particularly, the summer precipitation (by an average, respectively, of 40-60 and 100-150 mm).

This is a very unfavorable factor for the existence and recreation of pine forests.

The violating of construction rules harms not only nature, but also the health of people. Thus, a sewage line has been laid just several meters from the water intake of the Cheget and Itkol tourist bases, although the health zone for household and drinking water supply should be significantly greater. These and other facts show that in designing the large and permanent recreational zones and areas, it will be essential to plan for eliminating the violations and reestablishing the useful properties of the natural complexes, putting the reserve resources into operation or investing the necessary amounts for an intense process of restoration.

Thus, in designing there must be not only the standards for the one-shot use of territory, but also standards for the duration of its use between the unique current, medium and major "overhauls." Carefully elaborated standards for the maximum tolerable loads, recreational appraisal and an economic evaluation would make it possible to create a general scheme of a "recreational balance" for the entire nation and its major regions and have a good basis for 5-year planning.

In addition to the tasks of a comprehensive scientific elaboration of the economic, resort, architectural-layout and sanitary-hygiene problems, life has also urgently posed organizational management tasks. The developing recreational service as yet is still split up among scores of departments and cannot win in the "legal" competition with the long-established economic sectors which utilize the intersettlement territories (primarily agriculture and the local economy).

At present, in just the Elbrus Area, 38 organizations under different ministries and departments are operating and each of them shows little concern for conservation. For this reason, an important step on the path to improving the management of the entire recreational system would be a strengthening of centralized leadership over the departmental recreational organizations by the local authorities. This would make it possible not only to eliminate the haphazardness in developing valuable territories and enlarge their capacity, but also to carry out the measures of environmental conservation on a planned basis.

We feel the time has come to raise the question of giving the entire recreational system the status of a national economic sector. Tourism and sanitorium-resort services are not yet represented in the national economic plan and intersectorial balance as an independent sector and this creates difficulties in

determining their demand for material resources and in drawing up the current and long-range plans complicates coordination. Planning the development of recreational institutions on a national economic level would help in carrying out a uniform planning policy in this sector, it would aid the broadening of intersectorial ties among the recreational facilities and also the rational use of capital investments.

The development of one or another method in the recreational utilization of territories is inconceivable without assigning them to enterprises of the recreational service as has been done in agriculture. Obviously, along with the agricultural and forested lands, the time has come to set up the lands for recreational use.

In each major economic region, there is a recreational complex which includes both the recreational institutions and the servicing facilities. Depending upon its scale and "proportional amount," it can define the specialization of a region or exist along with other national economic sectors, imposing definite constraints on their development (for example, prevent the construction of production which is particularly harmful in sanitation and hygiene terms) or encouraging them (food products, specific types of industrial products, souveniers, local crafts and materials for resort construction). But whatever the case, recreational-industrial combinations and groups of enterprises are created and these are oriented primarily at satisfying recreational needs.

The resort of Nalchik could be put among such a type of multifunctional regional centers with a developed system of recreational-industrial enterprises serving a large area. To this, one must also add the need of a corresponding orientation for agriculture and consideration of its specific development in the food programs in creating a dependable source to provide food products for both the permanent population as well as arriving vacationers.

The objectively developing ties require a corresponding organizational formalization. The present state of the service sphere sectors such as trade, public dining, the municipal economy and cultural-domestic services, in resort areas often does not meet present-day requirements. The capacity of the stores (food and nonfood) lags sharply behind the needs of the local inhabitants and the vacationers. In all resorts, a bad situation has developed with the refrigeration, warehouse and utility systems. The centralizing of control over the development of the recreational industry will make it possible to carry out the major plans with a great economic effect. This presently is encountering significant difficulties.

On the territory of the KBASSR, major deposits have been discovered of pressurized, spontaneously-flowing geothermal waters, mainly mineralized with a surface temperature of up to 80°. The geothermal sources could noticeably reduce the energy shortage experienced by the republic. However, this important reserve is as yet very-little utilized, for example, for more than 10 years the Aushiger Deposit has not been developed. The geothermal waters could also be used for sanitorium and resort purposes, for central heating of industrial enterprises and population points as well as in the hothouse system, providing the local population and vacationers with fresh vegetables year-round. The use of geothermal waters means a savings not only in fuel transport, but also excludes expenditures on the amelioration of the air basin.

The creation of the major sanitorium and resort complex in the Elbrus Area will open up great prospects. This is a region of very rich mineral water supplies similar to "Narzan," a reserve of pure therapeutic air and an unique climatic zone. Although the creation of a sanitorium-resort complex in the Mount Elbrus Area requires great capital investments and an extended time, it will make it possible to significantly reduce the load factor on the KBASSR resorts as well as on the other resort zones of the Northern Caucasus and obtain a savings of 5-6 percent in capital investments.

The problems of the efficient use of recreational resources and the proportional development of the regional economy can be successrfully carried out only in the instance that these will be appropriately reflected in the comprehensive social and economic development plan. For a region similar to the KBASSR, where the recreational system is one of the specialization factors, the comprehensive plan, we feel, should have a special section devoted to this. It could solve a range of interrelated questions determined by the position of the recreational component in the regional economy. This is above all the coordinating of the long-range comprehensive development of the region's recreational system with the general scheme of the entire nation's "recreational industry," the impact of the sanitorium-resort and tourist-mountaineering complex on the development of the republic economy and determining the load factor for the related sectors.

Here also they could show the measures to account for the peak influxes in the food program and the planning of commodity turnover, for the development of public dining, for creating centralized bases to prepare semifinished food products and use wastes for the development of livestock raising as well as for the propostional development of the infrastructure base in the region. This section could establish the demand for nonmarket allocations for furniture, equipment and other consumer durables for meeting the needs of the vacationers. It could also serve as an important source in planning the training of personnel for the recreational system, in working out a comprehensive capital construction plan, the title lists of the construction projects, for the further development of the construction industry, the development of the transport system and so forth.

The major advances achieved over the years of Soviet power in the sanitorium-resort system and the development of other recreational forms in recent decades nevertheless do not make it possible to stop at the achieved level. The solving of new problems confronting the scientific and practical workers will make it possible to increase the access of broad working masses to the recreational resources, to increase their efficient use and ensure their preservation and reproduction.

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VLADIVOSTOK OFFICIAL DISCUSSES ACTUAL, OPTIMAL HOUSING CONDITIONS

Novosibirsk EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 7, Jul 82 (signed to press 26 May 82) pp 171-179

[Article by N. P. Moskvichev, chairman of the City Planning Commission of Vladivostok: "The City, Enterprises and Housing"]

[Text] Planning work on the city level includes a reconciling of the interests of the city and the enterprises located on its territory. The basic portion of the financial and material resources going into a city's social development is concentrated in the hands of the industrial ministries, although attempts have been made as an experiment to turn them over to certain city soviets. It can be assumed that the procedures for reducing the individual planning quotas for the labor collectives to a single city social development plan will not lose their pertinence in the foreseeable future. Their improvement will help to upgrade the entire system of socioeconomic planning.

Let us see how the interests of the enterprises and the city are reconciled from the example of the housing sphere of Vladivostok. In the program elaborated for the 10th Five-Year Plan a specific goal was set of eliminating the barracks, the decrepit housing as well as the attic and basement dwellings. The program was formulated in a special planning document which was reviewed and approved by a decree of the bureau CPSU gorkom and the gorispolkom.

While under ordinary planning conditions around 15 percent of the completed housing is used to resettle citizens living in barracks, decrepit homes, attic and basement dwellings, according to the program adopted for these purposes in 1979-1980, the figure was 45 percent. In this manner the minimum program was realized: the barracks were eliminated (housing with long corridors and rooms without kitchens and other service quarters), the basic portion of the inhabitants was moved from attic and basement quarters, and a program commenced for the complete elimination of substandard housing. A difference of 15 and 45 percent is substantial and naturally the work methods of the gorispolkom were altered.

Previously the plans for resettling persons living in barracks and substandard housing were worked out from above, in the form of schedule orders for the rayons, basically proportionately to the amounts of housing to be eliminated. We followed a different path, setting the goal of constructing the plan from

below, since the ultimate aim of the program for the next 2 years was already determined. Initially the rayispolkoms comprised lists of houses the inhabitants of which were to be resettled. These lists contained additional information needed for the subsequent evaluation of demand. The order lists were one of the sources of information for the preplanning studies. The second source was complaints from workers involving housing and submitted to the gorispolkom. The work with worker complaints was carried out individually, but in the given instance an opportunity appeared to consider them within the program plan. Thus, the municipal authorities had their own source of information independent of the rayon group. Since the limited possibilities are best seen on a city-wide level, it turned out that we were "playing" on a situation where the leaders of the rayon level endeavored to increase their share. As an average the requests of the rayons were reduced by approximately 10 percent. Information from the two designated sources was put together by the co-workers of the gorsipolkom. As a result, a single list was drawn up. It underwent a careful check, in the course of which a special gorispolkom commission visited the addresses indicated in it. The gorispolkom commission reduced the list by another 10 percent after carefully assessing the situation of each family.

Then the most complex thing started: determining the proportional participation of the enterprises in the city-wide program. From the very outset of this stage, the CPSU gorkom initiated an extensive explanatory campaign in the aim of involving the community.

It is usually felt that a contradiction in the interests of the enterprises and the city is apparent when the city confiscates a portion of the housing built by the direct labor method to ensure city-wide needs. To a significant degree the contradiction is superficial and fanciful as was seen from a specially compiled table which showed the distribution of the persons to be relocated from the barracks and substandard housing according to places of employment. It turned out that certain enterprises even gained from this city-wide measure and their employees received more housing area than they gave to city housing resources. Or, for example, the Far Eastern Hydrometeorological Institute in 1978-1979 turned over to the city 300^2 m of housing and according to the city program its co-workers received the same amount back although there had been no preliminary balancing. There were many such organizations and enterprises.

What are we, the city planners, doing in such an instance? With one hand we take away 300^2 m and with the other we give back the same 300^2 m. Why do we need to do this? Let us take a look at who had been granted the housing in either instance. For an enterprise's labor collective it does make a difference who receives new housing and the housing list is under the constant supervision of the administration and public organizations. Hence, it is essential to establish relations with them.

Public commission were organized under the rayispolkoms. Certain enterprises, having realized that a violation of the turn in providing housing had a negative influence on the production climate, also created public commissions for supervising the resettlement. Of course, possible and very probable are instances when persons recently hired or not excelling in labor discipline reside in a barracks or substandard housing. In such an instance the enterprise

turned to the rayispolkom with a proposal not to resettle the given person immediately into newly built housing, but rather to reorganize the chain of resettlements so that the new housing would be inhabited by a person standing at the head of the plant housing list while the person who was to be resettled by the city would receive only the vacated housing.

Although we did not succeed in carrying this out fully (90 percent of the barracks dwellers moved into newly built housing), it became obvious that merely by involving the enterprise community and including them in the work of actually carrying out the city-wide program it would be possible to eliminate the friction in the relationships of the enterprises and the city. Unfortunately, as yet there is no integrated procedure for coordinating the social development plans of the enterprises and the city-wide programs, although it has long been time to create such a procedure. This would eliminate the excessive tension in the relationships between the city and the enterprises and would disclose their common interests.

As yet the question comes down to particulars. In the Vladivostok City Planning Commission, in response to complaints from certain enterprise directors on the transfer of available housing, we showed the actual data on the housing received by enterprise employees within the city-wide program. Another city possibly would conceive of a different method. From the diverse attempts we must move on to national procedural provisions.

Unfortunately, in implementing any city-wide program, the enterprises not only gain, but, as is sometimes said, fall behind. Of course, there are enterprises who assign more to the city-wide housing than they receive from it. There are enterprises which clearly live at the expense of other enterprises. In terms of housing, these are enterprises located near microrayons under construction. The enterprises of individual ministries systematically allocate less money for the social development of their collectives and hence they "are in debt" to the enterprises of other ministries and the gorispolkom for the money which they do not intend to allocate. Here the party gorkom, the gorispolkom and the city planning commission must play the role of Peter the Great who persuaded the merchants that they must trade honestly as this was more advantageous to themselves as well....

At present, we are accounting for the growth rate of the social infrastructure for the largest enterprises over a protracted period. From a comparison of this with the average city indicators it becomes obvious which enterprise has constantly been concerned with building housing, children's and medical institutions and so forth and which year after year, in saving capital investments in the nonproduction projects, has actually used the social infrastructure created by the gorispolkom and the other enterprises, including enterprises of other ministries.

Particularly difficult is the work with enterprises who have nothing to confiscate, that is, barracks and substandard housing inhabited by their workers. In this instance we must fall back on complex recalculations within one ministry. We do not initially provide a subsidy from city housing for that enterprise which is not completing housing, but which needs it for moving out of barracks, but rather initially endeavor to get by by redistributing the

housing between one ministry's enterprises located in the city. Certainly any subsidy must be paid from someone's pocket. For every pleased party there is also a displeased one. In desiring to encourage the ministries and departments to participate in the city-wide program, we with the aid of decrees from the CPSU gorkom and the gorispolkom, considering the reciprocal obligations between the enterprises of one ministry and with the help of a saving formula "to the account of next year's limit," we establish unique loan relationships between the enterprises for housing. The gorispolkom follows the compensation for the housing borrowed in previous years and makes offset arrangements. In certain instances, the enterprise which has received housing by reciprocity must draw up a statement to turn over capital investments. There are no strict forms or written documents. This creates certain difficulties since much is based upon oral agreement.

The quality of our work is sharply reduced by the lack of completely reliable information on the actual availability of housing for the employees of a given enterprise. We assume, we know that a certain enterprise for many years has not built housing independently or through proportional participation. What stance should we assume? This depends upon the availability of housing for its employees but we do not have sufficient information precisely about this.

It is perfectly obvious that within the system of the planned management of the USSR national economy standard methods should be introduced for calculating the liabilities of the departments and ministries for the social infrastructure. The sound coordinating of the sectorial and territorial plans becomes possible only in the instance that the ministries and departments will be obliged to cover their apparent liabilities for the social infrastructure. For now, the very calculation of such liabilities is an unestablished, unstandard undertaking.

Theoretically all information on housing availability should be concentrated in the enterprise personnel departments. But in practical terms such information is found only for departmental housing. If the enterprise employees live in housing under the municipal soviet, then this housing is not considered at the enterprise. Moreover, it is in fact difficult to organize the creation and updating of the informational base on housing availability as the housing is scattered over the entire city, for describing it each worker's home must be visited by a special commission, the members of one family are employed at different enterprises and so forth.

The difficulties of accounting for availability can be judged from the following data. If we total all the housing lists which exist at enterprises and the rayispolkoms into a single city-wide list, it would include 40,000 persons. With a family factor of 3, we emerge with a need to provide housing for 120,000 persons. The standard per person is 9^2 m of housing and 13.5^2 m of effective area. In order to provide 120,000 persons with 13.5^2 m each, we would need more than 1.6 million m^2 of effective area.

We are beginning to consider another aspect as well. The available housing in the city has an effective area of a little more than 7 million m^2 and this is the equivalent of an availability of 12.8 m^2 of effective area per person. Seemingly we are close to the standard of 13.5 m^2. If the housing area below

the norm is compared with what we have, this means that considering the increase in the population the increment in the housing available must be not 25 percent, but just 10 percent. There is the different question of the substantially different estimates of need. Here also one is confronted both with families the members of which are employed at different enterprises, the release of housing in the moving into new residential areas, the surplus areas among individual citizens and much else.

The housing lists which are separate for the enterprises overstate the demand for housing by approximately 1.7-fold. For this reason, it would be reasonable to have a uniform registering for those requiring housing, for example, according to the city rayons. This would make it possible to systematize the very positing of the question on the level of housing availability.

There have been certain shifts in the designated questions. Of all the areas of unproductive capital investments, housing construction has been most involved in proportional participation. For example, children's institutions are built by enterprises almost exclusively on an independent basis. The departmental children's centers are the basic source for satisfying the demand for children's institutions among enterprise workers, but the complaint of the shortage of them are received by the gorkspolkom. Accounting for the availability of children's institutions on the spot is simpler to organize than accounting for the availability of housing. But the city has even fewer methods for evening out this level. We can intervene when the enterprise is building, for example, fishing and hunting facilities while having few children's institutions. Then there is an opportunity to thwart an outright attempt to live off of others. Here we can refuse to allocate a plot or not approve the plans. But these are particular instances.

Although individual trips to the ministries for funds (this unique element in the mechanism of coordinating territorial and sectorial planning) is in operation it is still clearly insufficient. It ends up with increased moral strain and a poor portion of objectively sound decisions.

The housing standards are presently used as arguments in the debate and not as a planning tool. In truth, they cannot be employed otherwise since they only indirectly consider the demographic structure. For planning the municipal economy they are too aggregated.

Can everything still be considered using the norms? When the first building were constructed on the Prospect imeni 100-Letiye Vladivostok [Vladivostok Centennial], few people wanted to move into them and exchange with the center usually involved a large loss of square meters. But now this is the most attractive residential area for the city residents. Large enterprises have been built next to it and at present it, as we say, is "select" in terms of a labor force. The enterprises built nearby for an extended time invested several-fold less money into housing construction than they should have, but all the same they did not end up last in terms of available housing.

We would like to make the dynamics of the number of jobs at enterprises a common element in the calculations and bring the dynamics of expenditures on the social-service sphere into conformity with this.

As yet this is merely a plan. In practice we must work out report entries forwarded to the ministries with a detailed justification of the town's complaints about the volume of capital expenditures for nonproduction construction.

A common problem for the entire country is the discrepancy between the structure between the completed housing and the demographic structure. New housing is completed regularly and new plans are offered in which the share of three- and four-room apartments is high. Now designing has moved ahead in comparison with the real possibilities of providing housing. This ends up first of all with an exceeding of the availability standards. But sometimes for a long time we must wait for suitable candidates to move into a multiroom apartment and during this time the new apartment stands empty. At times we must fill one apartment with a family having adult children and this can be interpreted as a variation of underoccupancy.

The attempts to study this problem have shown that its complexity clearly exceeds the capabilities of the city planning commission.

The future of relationships between the city and the enterprises located in it should belong to a certain financial mechanism. For the conditions of a socialist economy, one can scarcely insist upon the resurrection of the category of "city rent." But some acceptable variation of this is essential. If not as the basis for the financial relations between the city and the enterprises, it is at least needed as a calculated indicator for ensuring higher reliability and a clearer orientation to the long-range planning calculations.

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METHODS FOR FINANCING URBAN TRANSPORTATION SYSTEMS REVIEWED

Novosibirsk EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 7, Jul 82 (signed to press 26 May 82) pp 180-189

[Article by Yu. N. Lachinov of the Scientific Research Financial Institute of the USSR Ministry of Finances in Moscow: "Municipal Passenger Transport: Organization, Financing and Cost Accounting"]

[Text] A strengthening of the regional management system will make it possible to solve many transport problems on a new level within the territorial formations. In the present article we will be talking about passenger transport.

In the "Basic Directions for the Economic and Social development of the USSR for 1981-1985 and for the Period Up to 1990" the tasks confronting transport have been formulated as follows: "The basic task in transport is the complete and prompt ssatisfying of the demand of the national economy and population for shipments as well as increased efficiency and operating quality of the transport system." These tasks can be fully applied to municipal passenger transport as well. The "Basic Directions" envisage that passenger turnover for just public buses alone will increase by 16-18 percent over the five-year plan.

While the problems of production transport can be solved on the basis of the existing structure (the Ministry of Railways, the republic motor transport ministries and other organizations), the management of passenger transport above all needs an organizational improvement. The problem of the losses occurring in municipal passenger transport as caused by the stable fare, by its imperfect organization, by the increased cost of new comfortable means of transport, by the increased wages of the workers, by the higher prices for fuel and by the increased cost of a number of other components in the transport service has impeded the development of cost accounting relations and has not focused the transport workers on a maximum satisfying of the public's needs.

The cost of transport services is constantly rising. Profit is not even planned now for any type of municipal passenger transport and subsidies comprise around one-half of all the expenditures of the transport enterprises.

No control measures have made it possible to escape from the "free-riders." Their number has not declined and the losses from receipts exceed 20 percent.

What Is Municipal Passenger Transport?

Having defined transport as one of the general conditions of production, K. Marx explained the nature of the transport process and concluded that there is an independent sector of material production, the transport industry.

Did K. Marx include municipal passenger transport in the concept of the "transport industry"? He did not write about this directly and this is understandable, for in his times such a question had not yet arisen. It was only the subsequent development of large-scale industrial production and the cities and the locating of residential areas a distance away from the enterprises that led to the extensive development of municipal passenger transport. But should this be considered a variety of the transport industry or put as a municipal service? Possibly also municipal passenger transport should be put in an independent national economic sector. As yet, this question has not received a unanimous resolution in scientific circles. And practice as well does not provide a clear answer as one portion of the municipal passenger transport is put in the municipal economy (streetcars and trolley buses), another is considered as the transport industry while still a third is under various departments.

At the same time, the place of municipal passenger transport in modern social production is completely determined by the factor that the labor activities of a city depend largely upon its steady operation.

In our view, it is most correct to consider the basic function of municipal passenger transport to be not the transporting of passengers generally, but rather the delivery of workers to the place of employment. In this sense it serves production, and transport service is a service for production, a service not of a municipal, but rather production nature. Then it is right for us to feel that society produces a product expending not only raw products, materials, manpower, fixed capital and so forth, but also transport. For this reason transport expenses should be considered in the gross product of society as an element of production outlays which increases the cost estimate of this product.

But what then about the transport service? Does it exist? Yes, it does. The function of a service for the public in municipal passenger transport is expressed in the fact that it serves the personal trips of the passengers, for example, to stores, theaters, for visiting, recreation and so forth. Here the transport service for a person operates as a means for saving no longer working, but rather free time. Here he pays for this saving. But the stores and theaters, the legal consultations, the recreational facilities and other enterprises and organizations which gain income from our attendance are interested in the delivery of the purchaser, spectator and client to them.

The definition of a service as a useful effect from activity was applied equally by K. Marx to both the demander (the purchaser) and the supplier (the seller):

"A service is nothing more than the useful action of one or another consumer value, whether it be a commodity or labor."[1] And while transport ensures their meeting (it reconciles their interests), should this not be reflected in the exchange value of the articles of common interest? Certainly the corresponding expenditures of municipal passenger transport can be considered in the outlays of the trade enterprises and all other enterprises, organizations and institutions located in the city and served by the transport.

It would be logical to recognize that the transport expenditures operate as an element of the social production outlays and can be reflected in the value of any product and services of a nonindustrial nature. Only certain types of services (travel for the purpose of recreation, visiting and so forth) can be paid for by the public itself.

If the expenditures for maintaining municipal passenger transport are considered in the outlays of each enterprise, institution or organization in a given city in accord, for example, with the number of persons working in them (and this is virtually the entire working population of the city), then through the prices for any product and service, all the members of society will be involved in the financing of transport and particularly those who do not use transport. They should be involved in these expenditures since society has spent them on producing the product and the services.[2] This actually does occur in the maintaining of departmental transport for delivering enterprise employees to the place of production. But the economicness of departmental transport is much lower than public when compared in terms of the number of units and seats and its running when considered as unproductive outlays places a burden on the financial state of the enterprises as a whole.

Who Should Pay for Traveling?

Thus, the putting of municipal passenger transport in the sphere of material production is completely valid. Life has already provided examples of precisely such an approach. In agricultural production, the daily expenditures of delivering the kolkhoz members and agricultural workers to the production area and back home are considered in its outlays. Although these transport costs do not figure in the costing as any separate item, they are accounted for in the general expenditures and are reflected in the cost of the agricultural product. Here the workers do not pay for the trip and their transporting does not have any impact on income. All sorts of business trips and other movements

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[1] K. Marx and F. Engels, "Soch." [Works], Vol 23, pp 203-204.

[2] LITERATURNAYA GAZETA (No 47, 1971 and No 3, 1972) took up the problems of municipal passenger transport. However, everything was reduced to proposals to replace the fare paid by the passengers directly on the transport, that is, to distributing various types of travel tickets at the enterprises and organizations. In essence, this would not solve the problems of covering losses in municipal passenger transport and would not eliminate the problem of supervision on transport. Obviously, for this reason the Expert Commission of the USSR Gosplan turned down an analogous proposal by the RSFSR Ministry of Motor Transport.

of employees in the interests of production also include transport expenses as production ones and are considered in outlays. Analogously municipal passenger transport can be considered an attribute of all municipal production and the transport expenditures can be related to the outlays of the serviced enterprises and organizations and in accord with this efforts can be made to minimize transport outlays with the best servicing of the city's production activities. Precisely in this manner, we feel, it is possible to determine a rational route network, load factor and regularity of traffic and coordinate the flows of various types of transport in a city.

In linking the finances of transport organizations with the finances of enterprises from different national economic sectors, we would determine the share of participation of each enterprise or organization of a city in the financing of the municipal passenger transport as an amount proportional to the number of employees at a given enterprise (organization).

In addition, the workers themselves could participate in the financing of municipal passenger transport to the degree that they utilize transport for personal travel, although, strictly speaking, this is not required as the transport expenditures could be accounted for in all the measures involving our leisure.

Thus, the monthly total of funds turned over by the given enterprise to the fund of the municipal passenger transport will consist of a part which increases the value of the produced product and a part which is directly subtracted from the wages or from the funds for sociocultural measures. For the budget-supported organizations, the amount of financing from the budget would be increased in accord with the number of employees.

For cities with a large number of arriving passengers (transit passengers), such as Moscow, Leningrad and Kiev as well as for resort cities it would be possible to employ surcharges on rail and air tickets and on the prepaid trips to resorts or work out a simple system for redistributing the funds.

Considering that there are two types of enterprises and organizations, two basic sources for financing municipal passenger transport could also be established. These are deductions from the value of the product and services of the enterprises and organizations in a city operating on cost accounting and the budget deductions in the amount determined by the share of budget-supported organizations.

The proposed system for financing municipal passenger transport will make it possible to solve the problem of the losses incurred by the transport enterprises and carry out a number of measures aimed at improving its management. These would focus transport on the end operating results and bring the interests of the transport enterprise collectives beyond the limits of just deriving income.

The most important of these measures could be the forming of an administration which brings together all types of public passenger transport in each city which has this. These administrations could be brought together within the oblasts and republics by a central administration for urban passenger transport.

Each municipal administration could create a fund sufficient not only to cover all expenditures for the running of urban passenger transport, but also for improving the transport system. These funds could also become a source of capital investments.

We feel that the municipal passenger transport administrations would best be put under the gorispolkoms of the soviets. This would make it possible to concentrate the management of the unified transport system in one body; to organize a study of passenger flows regardless of the type of transport; to calculate unified traffic schedules, to work out a long-range plan for organizing passenger traffic in the city, to provide for its reconstruction and so forth. This would also conform to the decisions of the 26th CPSU Congress and the March (1981) Decree of the CPSU Central Committee, the USSR Supreme Soviet and the USSR Council of Ministers on strengthening the role of the local soviets.

The proposed system, we feel, would immediately lead to the elimination of the ticket inspection system. This would provide a savings totaling approximately 200 million rubles a year (the printing of the tickets and the travel documents; the manufacturing, upkeep, repair and amortization of the ticket booths; the support of inspectors and conductors and the distributors of travel documents; additional payment for drivers for distributing the travel documents; the wages for cash box collectors and others involved in the sorting of money; the manufacturing of fare tokens). In addition, manpower and production areas would be freed now engaged by the receipts collecting departments and the shops for the manufacturing and repair of the booths.

The replacing of the ticket inspection system would make it possible to shift control from the sphere of fares into the sphere of the efficient operation of the means of transportation, traffic regularity and the rational disposition of finances. Then it would be possible to assess the operations of the enterprises and the drivers and make their incentives dependent upon the preciseness of operations and upon the satisfaction of the passengers and served enterprises.

The Budget and the Transport System; Cost Accounting Ties

The relationships of the municipal passenger transport enterprises with the budget are limited to two aspects: financing from the budget and the payment of amortization to the budget.

This does not provide any incentive for the transport enterprises to economically spend the allocated funds. Often they inflate the allocations requested and fall into parasitic attitudes. Since the financing of transport enterprises from the budget for the transport enterprises themselves is nonspecific, the supervising of the rational use of budget funds is difficult. Moreover, the amortization paid to the budget provides no incentive for the enterprises to make efficient use of the rolling stock, since the specific amounts collected are returned to them in the form of a subsidy "for covering losses" as free working capital. The efficient oeration of the rolling stock for many enterprises is viewed as the operating of the transport until worn out. Concern for replacing the rolling stock is shifted to the state planning bodies which cannot consider all the particular features of operating passenger transport on

the spot. The system examined in this article for financing transport would make it possible, in our opinion, to organize the operations of municipal passenger transport on the bases of complete cost accounting.

The transport administrations would become self-financing and profitable and hence there would be no need for budget subsidies. The internal sources for financing measures to enlarge the transport system and rationalize it could be complemented by bank credits. The increased amount of money from the centralized production development funds together with the local soviets and bank credits--all of this taken together would make it possible to carry out capital measures on a city-wide and regional scale.

It is also possible to significantly broaden the rights of the transport administrations. Here direct contracts with the served enterprises for express traffic and contracts for establishing a network of passenger transport in new cities could assume particular significance. It is possible to conclude direct transport contracts with the enterprises who produce the means of transport, the spare parts and other equipment. The right to use credits would also strengthen the independence of the municipal and regional passenger transport administrations.

A broadening of rights also increases the responsibility of the transport administrations for the precise operation of municipal transport. Here a major role could be played by linking the finances of the served enterprises with the finances of the municipal passenger transport, as well as by a correctly chosen system for allocating funds between the transport enterprises.

Full cost accounting envisages the presence of cost accounting relationships within the transport associations. Internal cost accounting at the enterprises of municipal passenger transport (in this instance these will become elements of the transport administrations) will focus the activities of the enterprises on a maximum savings of funds and the efficient use of rolling stock. A certain loss of independence by the transport enterprises (even now very tentative) would be compensated for by the simplicity of financial work, by the reduction in overhead and other advantages which the centralizing of the transport system would provide.

The introduction of cost accounting financing for municipal passenger transport from deductions by the enterprises and organizations served would significantly free the state budget of subsidies to cover the losses of the transport enterprises. For example, for the RSFSR this total would be around 320 million rubles a year (without the subways). In addition, this would free the motor transport ministries from the internal redistribution of profit to cover the losses of municipal passenger transport and would make it possible to channel additional funds to systematize and enlarge the transport service system for the cities and regions. The passenger transport administrations would pay the budget a fee for the capital and this would encourage the most efficient utilization of rolling stock. In addition, a portion of the deductions could be channeled to the local soviets and to the superior administration.

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NEED TO REDUCE LAGS, OUTLAYS FOR SHIP REPAIRS UNDERLINED

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[Article by Yu. I. Golik, senior engineer on the fish freezing vessel "Lena" of the Dagestan Fishing Industry Administration in Makhachkala: "Let Us Chat about Ship Repairs"]

[Text] One of the ways for the more efficient use of fishing vessels and for increasing the labor productivity of their crews is to increase the share of operating time in the total balance of the fleet's calendar operating time. For this, it is essential to increase the level of planning and organizing ship repairs. The problem is very urgent for all the fishing production associations. The task of shortening repair times on vessels of the fishing industry fleet has also been raised in the decisions of the 26th CPSU Congress.

The relationships between the administration of a ship repair yard (SRZ) and the ship-owning enterprise start with the concluding of a contract on repair work. Ordinarily, this procedure is drawn out due to the fact that the clients simultaneously represent the repair departments.

But finally, work gets underway. In disassembling individual pieces of equipment, piping systems or framing, the repairmen must draw up defect statements or lists and submit these for signing to the vessel operators. In a majority of instances these documents are signed when the vessel is ready to come out of repairs. At first glance this is a harmless violation of a formal procedure. But in fact it is an escape hatch for padding and unconscientiousness. In the additional defect lists it is possible to alter the category of repairs and increase the amount of work and material intensiveness. In precisely this manner the administration of the SRZ creates a time reserve in norm-hours and supplies of resources, particularly for scarce and easily placed materials. For the ship-owning enterprises this ends with an increase in the stoppage of the fleet under repairs and often with a doubling of the cost of the work.

The simplest way to put an end to this is to have standard, printed defect statements for each type of ship equipment. But the most effective method is to exclude the influence of the flaw-detection process on the cost of repairs. This can be done by introducing prices for repairs on the basis of standard job lists and standard features for the repair categories of one or another assembly or by employing standard repair lists which have already been worked out for

many serially-produced vessels which are operated in a system of continuous maintenance. Then the flaw detection process is turned into a production stage in inspecting the assembly to be repaired.

Repair stoppages can also be shortened by preliminary acceptance of individual types of ship equipment by the technical inspection department of the SRZ along with the captains and the ship crews as work on the equipment is completed, if this does not require running trials and a statement from the Inspectorate of the USSR Registry. This, unfortunately, is not practiced. On the other hand, when the planned date for completing the repairs approaches, the SRZ leadership undertakes every measure to sign the statement, even if in fact the work has not been completed and the running trials are not over. Here pressure is placed on the captain and the senior engineer not only by the yard, but also by the superior level, in the given instance, the association.

As soon as the statement has been "squeezed out," the work pace drops sharply while it should intensify. This is a period of testing out the ship equipment and the running trials. Flaws and individual defects turn up precisely in this period. As long as everything has been signed for, why worry. Just try to get a problem eliminated quickly! There is no incentive for this as the statement is sealed and delivered.... It is no surprise that the vessels where the acceptance documents have been hurriedly signed, as a rule, stand additionally from 3 to 6 months in the yard under repairs. Even after they are back in service, the personnel of the ship equipment service often continues to eliminate flaws. This tells negatively on fulfilling the quotas for the catch and processing of fish and leads to personnel turnover.

Unfortunately, the SRZ is not interested in introducing advanced work methods and mechanization as this involves a reduction in the estimated labor intensiveness. The time has come to switch to direct norm setting for the length of repairs. The length norms should be progressive and based upon the technologically necessary time.

The absence of effective incentives to reduce the amount of yard repairs is also a factor in the significant expenditures on repairs. With the existing practice for preparing for repairs, the ship's leadership endeavors to have high plan limits. If an effective system were created for a material incentive on the part of the crew to improve ship maintenance during operations, then the need for yard repairs on the fleet could be significantly reduced.

Recall the Eastern saying about the physician who was paid when his high official patient was well again. Not a bad principle! If all expenditures on repairs were reduced in comparison with the envisaged limit, the crew after the end of the repairs should receive a bonus for maintaining the vessel in a good state. In our system, on the contrary, the SRZ is interested in increasing the amount of paid repairs and the association involuntarily supports it in this in requiring the creation of a ship brigade for helping in the work of the ship repair yard and the amount of this work is reported for the latter.

The material and technical supply conditions are also an impediment to reducing repair time. The work flow in ship repair work can be organized solely on the basis of the supply flow. Considering this, from my viewpoint, it would be

advisable to organize preassembly bases which already are found in other national economic sectors. The creation of such bases would make it possible to allocate resources in the necessary manner, in the quantities and on the dates coordinated with the ship repair plans and not with the allocation plans which are frequently divorced from the actual conditions of ship repair work.

Practice has rather convincingly shown that the time spent by the vessels under repairs is reflected in the operations of the fishing fleet even more than the cost of the repairs. For example, with the same category of repairs on the same type of vessels (the "Dvina" at the Makhachkala SRZ and the "Kama" at the Tallinn SRZ), the former was under repair for 3 years and 2 months and the latter for 1 year and 4 months. The expenditures on the repair of the "Dvina" not counting the wages and food for the crew were 827,000 rubles. If it had been overhauled in the same period as the "Kama," then from the saved time it would have been possible to catch and process an additional approximately 46,000 quintals of fish valued at 2,225,000 rubles.

The efficiency of the ship repair enterprises is also influenced by the organizational structure and management of their operations. At present, they are greatly dependent upon the departments with which they are affiliated. Thus, our association Dagrybprom [Dagestan Fishing Industry] does not find it advantageous to develop repair capacity. Output per worker in ship repairs is 6-fold lower than in a fishing enterprise. In increasing the number of workers at the SRZ by 30 persons, the volume of its gross product can be increased by 200,000 rubles, and for maintaining labor productivity in the association as a whole on the previous level with such an increase in the number of ship repair workers, an additional product of 1.2 million rubles must be produced. The influence of this factor rises even further if the ship repair enterprise carried out work for the fishing fleet which is not party of the association or for outside organizations. This situation leads to a point where the fishing association finds it disadvantageous to develop its ship repair enterprise.

In my view, the time has come to centralize all the repair enterprises under the ministries of the maritime and river fleet and the fishing industry under a single leadership. But for this it is essential first of all to unify the system of indicators for planning and economic incentives in the production operations of all ship repair enterprises. For a start, in my view, it would be more rational to put all the ship repair enterprises of our sector under Glavremflot [Main Administration for Fleet Repairs] of the USSR Ministry of Fish Industry.

The Ministry of Fish Industry has begun to set up special ship repair industrial-production associations. But it has approached this action from purely departmental considerations. Thus, a ship repair production association was organized under the All-Union Kaspryba [Caspian Fisheries] Industrial Association at Astrakhan, but for some reason it did not include the Makhachkala Ship Repair Yard and the SRZ of the other associations located on the shore of the Caspian Sea.

The more quickly the economic and organizational measures are carried out to improve ship repairs, the more beneficially they will tell on increasing the efficiency of fleet operations.

POSSIBLE USES FOR WORKED-OUT UNDERGROUND MINE SHAFTS

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[Article by Candidate of Technical Sciences A. A. Bovin of the Novosibirsk National Economic Institute: "A New Resource--Underground Mining Works"]

[Text] Agricultural, production and sociocultural installations are already being located in underground cavities. Since 1968, patients with bronchial asthma have been treated in an old salt mine in the Transcarpathian Area. An underground climic is also functioning in the works of the Nakhichevan salt mine. An analogous allergological medical facility is being created in Armenia. There are underground sanitoriums in Austria, Poland and Romania. There is also information that patients have been treated in natural caves and underground mining works as early as the 17th Century.

Frequently the old mining works are used as hothouses and nurseries for growing mushrooms, vegetables and flowers. Such a hothouse is functioning at the Belousovskiy Mine in East Kazakhstan Oblast. Flowers are being raised in a former electric locomotive depot and mushrooms, tomatoes and cucumbers in other works. At the beginning of the 1970's an affiliate hothouse of the Botanical Garden of the Ukrainian Academy of Sciences was organized at a depth of 750 m in the former explosive warehouse of a mine. There are underground hothouses in old mines in Hungary, the United States and England.

There is the opinion that underground conditions are good for the manufacturing of precision instruments. Thus, in the United States a shop for manufacturing them is located in an old stone quarry.

In the journal EKO (No 4, 1977), in describing a trip through the Ruhr Industrial Area, M. K. Bandman gave interesting information on the use of old mining works: "...The mine areas are used as plant shops and warehouses. The mine shafts have been used partifcularly originally with intercity (for two or three cities) trade centers being built into them several stories underground."

Extensive research is underway on the problem of creating permanent storage facilities for harmful waste products, particularly radioactive ones. Plans have been created for using underground cavities for this. The press has announced the creation of such a storage facility in the works of a salt mine.

Also known is the use of old mines as oil storage capacity. Near Sevastopol, a winery is located in the tunnels left after the excavating of the white Inkerman stone. Other plants of the same type are also known.

The worked-out spaces are also of interest for scientists. In one of the salt mines in Donetsk Oblast is a unit of the Nuclear Research Institute of the USSR Academy of Sciences designed for investigating the cosmic flows of neutrinos. An analogous unit in the United States is located in a gold mine.

There is a whole series of museums and tourist facilities underground. The Adzhimushkayskiye Quarry near Kerch, the Odessa Catacombs and so forth are well known historical monuments. Museums located in old mines and devoted to the development of mining can be found in Poland, Yugoslavia and Sweden.

As a rule, the underground cavities are characterized by a special microclimate. In them, there is a constant temperature, humidity and pressure year-round. In addition, in the salt mine works, the air is sterile and possesses a disinfecting property. Overseas specialists also mention such advantages of building warehouses and production enterprises underground as their low cost of repair for the interior spaces, low expenditures on air conditioning, the absence of unfavorable surface conditions, the fireproof design of the spaces, the unlimited bearing capacity of the soil and so forth.

In our nation, the volumes of underground mining works are colossal. They run into hundreds of millions of cubic meters a year. Undoubtedly, not all of this could be employed since a large portion of the worked space is filled in by the collapsing enclosing rock. The cavities in the coal industry can be employed to a smaller degree. Here of interest are chiefly the main mining works such as the shafts of the mines, the ore yards, the crosscuts, drifts and various chambers. At mines involved in extracting the ore of various metals, salt and chemical raw materials, in addition to the mine works it is possible to employ the chambers remaining after the clear stoping of the mineral.

The time has come to assess this type of resource and employ it. Such centers of the mining industry as the Donets Basin, Krivoy Rog, the Urals, Kuznetsk Basin, the Rudnyy Altay, the Karaganda Coal Basin and others can become its sources. These mining areas are within the limits of large cities or close to them and have well developed transport ties. This is particularly effective for locating warehouses and production facilities underground.

The use of underground cavities requires the carrying out of the corresponding range of scientific research and design work. In order to determine the number of cavities and their condition, it is advisable to first survey the old mining works of operating mines, to assess the fundamental suitability of them for subsequent use, to conceive all the possible variations and determine the sectors which could become the potential consumers. After this the specific problems of adapting the existing cavities for usable installations should be settled. In parallel it is essential to develop economic research on determining the effective ways for using the underground works.

Even in designing new mining enterprise, provision must be made for measures to preserve the worked-out space for subsequent use. Since this problem has not been studied, at present it is difficult to predict the economic effectiveness of such a measure. However, it is significant. The problem is that the expenditures on carrying out the mining works, as a rule, are completely transferred to the extracted mineral. In a majority of instances, the residual value of the underground space is small. It is not comparable with the expenditures which would be required, for example, for building equal-sized quarters on the surface. It is merely a question of equipping the underground areas, maintaining them in a workable state and ensuring the normal functioning of the underground facilities. The use of the available free space will make it possible to obtain additional quarters without expanding the amount of construction and possibly by somewhat reducing this.

The very interesting book by R. Legget entitled "Goroda i geologiya" [Cities and Geology] published in 1976 by the Izdatel'stvo Mir drew attention to the prospects of employing the cavities after mining limestone in the United States: "Free space is becoming so precious that one might seriously propose, when necessary, that the mined rock be dumped in the river since the value of the rock comprises only a small share of the value of the freed space."

In order that the extracting sectors be economically interested in turning over underground cavities to other sectors for their further use, it is advisable to work out incentive prices for underground spaces which would be advantageous for both sides. The receipt of money from organizations and enterprises using the underground cavities would increase the profitability of the ore mining sectors.

Let me give one other argument in favor of using the old mining works and locating various facilities in them. In recent years, underground urbanization has developed intensely. Cities are growing not only upwards but also downwards. Transport arteries, garages, power plants, stores, sewage systems, book repositories and so forth are being located underground. Special mining work is carried out for them. For this reason it is essential to endeavor to utilize at least a portion of the existing free underground cavities for these purposes.

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EVALUATION OF AUTOMOTIVE SERVICE CENTERS

Novosibirsk EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 7, Jul 82 (signed to press 26 May 82) pp 197-200

[Article by Candidate of Technical Sciences O. D. Markov of the Kiev Highway Institute and Engr B. P. Barmakov of the Central Mathematical Economics Institute of the USSR Academy of Sciences in Moscow: "How to Push the Cart?"]

[Text] In one of the issues of EKO there suddenly appeared the memorable notion that indicators have become the true masters of the enterprises, at times against the wishes of the leader.

In actuality, the influence of the indicators on all aspects of the life of enterprise collectives is so great that it is hard to overestimate. But an indicator is still not an efficiency criterion. Only the conformity of the former to the latter helps to increase production efficiency.

From the example of the motor vehicle service station (STO), let us examine how the indicators "work." First of all, let us ask the question: "What are the efficiency criteria for the STO?" Obviously these would include the level of satisfying demand, the quality of the services, the level of services and the economic results.

The level of satisfying demand is determined by the ratio of actual demand to supply. Actual demand--the aggregate of requests arising among the owners in the process of operating a motor vehicle--changes as motor services develop and the material and spiritual level of the population grows. Certain forms of services disappear and a need for new ones arises, although the objective demand for the servicing and repair of motor vehicles remains fixed or even declines due to their increased reliability and durability. For this reason it is possible to examine two levels of satisfying demand:

1) The minimal for spare parts, materials and types of work related to the maintaining and restoring of the workability of a motor vehicle;

2) Demand for the forms and types of services, that is, the needs of the clients for the times and forms for performing the work.

From the viewpoint of the motor vehicle owner, those services related to the repair and maintenance of the motor vehicle which guarantee its trouble-free,

dependable operation until the next servicing can be considered the qualitative ones. From the technical viewpoint, the qualitative ones are those services which are performed in accord with the requirements of the production methods, the technical conditions and state standards. However, the quality of services, as the product of the STO, differs from the quality of motor vehicle maintenance and repairs. In addition to the quality of maintenance and repair on the motor vehicles, it includes the quality and level of services for the clients. The latter is determined by the time spent on turning in and receiving a motor vehicles, the time for carrying out an order, the possibility of obtaining services, their completeness and so forth.

The demand for a high level of services includes the nature and moral standards of the relationships between the clients and the STO workers as well as the satisfying of the needs of the clients not directly related to motor vehicle servicing.

Do the current indicators correspond to these criteria for the operation of the STO?

At present, the STO are judged according to such indicators as the amount of sales of domestic services, receipts for repairs and servicing of motor vehicles, the total sales volume of services and retail commodity turnover.

The sales volume of domestic services (the net product of the STO) is formed from the clients' payment for work performed related to the servicing and repair of motor vehicles not counting the value of spare parts and materials. Understandably the higher the labor intensiveness of the order the higher the volume of sales and wages for the workers as this is figured in percent of the service sales volume. This gives rise to a consumer attitude toward the client. For the station the better client is the one who "gives" more services. The most advantageous is that range of services which does not require spare parts, although a majority of the jobs performed at the STO necessitate spare parts and materials. In endeavoring to fulfill the plan for volume, the auto service enterprises restrict the range to that list of jobs which have greater labor intensiveness. It is advantageous for the stations to perform body work, diagnosis, technical servicing and other jobs where spare parts are virtually not required. Many of them have been turned into body shops which neglect those types of maintenance and repairs which include an insignificant proportional amount of services. If a customer needs scarce spare parts, then in violation of the rules the station endeavors to sell them only along with some type of service having sufficient labor intensiveness, for example, a carburator along with technical servicing. This is as if a person wishing to purchase a tie had to buy a coat as part of the deal.

For this reason, for assessing the operation of the auto service enterprises, in our view, it is more essential to have an indicator for the range of services, that is, a consideration of each incoming request (for a sector, the level of satisfying demand). Under these conditions the STO would have a need to study demand and seek out ways to satisfy it. The same work of carrying out the plan would be carried out on a different plane, and we would arrive incidentally at the rubles of domestic services, as a result of fulfilling the

plan for product range. It also seems to use that among the indicators we must also include an estimate of the level of services. It cannot be said that attention is not paid to it now (like to the quality of services). There is a struggle for both, but within the limits ensuring the career safety of the leadership. The impact of the client on the interests of the STO is substantially lower than the impact of the plan.

How is the level of services expressed? Primarily in the amount of time spent by the client on turning in a motor vehicle for repair or for servicing and receiving it back. It is also essential to consider the nature of the relationships and conditions which the client encounters in servicing. According to our estimates, the time expenditures of the clients spent on obtaining automotive services as a whole for the Ukraine are comparable with the diverting of 25,000-30,000 persons from production for a year.

Now let us assume that instead of the volume of service sales another indicator has been set, namely the servicing time. To what does this lead? The STO will be forced to iron out the procedures for receiving and giving back the motor vehicles and improve the organization of production. An exceeding of the standards would involve penalties while a reduction would provide an incentive.

An indicator describing the quality of services can also be completely realistic. It can be expressed by the deviations from quality, that is, by the number of complaints and returns, although consideration of these indicators is rather complicated.

The efficient work of a STO is determined not only by the amount of money received from customers, but also by the socioeconomic effectiveness both in the production sphere and in the sphere of service consumption. It is quite apparent that the volume of services does not include those losses which the state suffers because of the significant time expenditures by the clients or from the social consequences of an insufficiently high quality and level of services. Without considering this, we forget that the product of the STO is ultimately a service which is provided to an individual customer upon his individual request.

The work of the auto service enterprises in the Baltic republics and the European socialist nations indicates that the quality of servicing can be significantly increased by a correct organization of the providing of services (preliminary registration, inventiveness in the forms of providing them). This can also be aided by improving the work indicators of the STO and by bringing them closer to the efficiency criteria.

It is not to be excluded that the head-on solving of the problem (the criterion indicator) proposed in the present article will be not fully satisfactory. However, it can be asserted that the indicators should meet the criteria for a desire to obtain money for services forces one to abandon clear thinking and to push the cart sideways while it is much easier to push it forward.

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MORE EFFECTIVE APPROACHES TO MANAGEMENT SHIFTS URGED

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[Article by Candidate of Economic Sciences I. V. Lipsits from Moscow: "How to Shift Management Personnel More Efficiently"]

[Text] Why does the appointment of a new leader who has been so successful in a previous position so often produce a minimal or even zero effect? Recently, foreign journals on management questions have contained several interesting articles on this question. They propose various methods for the more successful carrying out of such shifts.

Thus, let us assume, a new leader has already assumed a position. Let us even assume that the organization has made this process easier for the new leader, in employing an intermediary for establishing relations between the new chief and his subordinates. But now the intermediary has left and the new leader can finally, having rolled up his sleeves, settle down to the questions of his own subdivision, thereby demonstrating all his capabilities. He may possibly do this, but rolling up his sleeves is a completely different question to which practice at times gives a negative reply. In actuality a new man during the first weeks of his new job often goes onto a strong defensive, in waiting, observing and judging. As a rule, such conduct finds complete understanding among those around who obviously consider the adaptation quite natural. When acclimation is over and the new leader actually sets to work, the effectiveness of it is often much below what he demonstrated in the previous position and seemingly should maintain at a higher post. What has happened during the "dead weeks" of adaptation to force the leader to take up a defensive position and what has led to the changes in his manner of management?

Probably the first factor would be the contradictoriness of the expectations which surround the new leader. On the one hand, they are officially expecting him to breathe new life into his subdivision, to increase its efficiency and alter the manner of work of subordinates. On the other hand, he is led to understand more or less clearly that during the first months there is no need to initiate fundamental reforms, it is better initially to get into the job, "to grow into the soil here," and so forth. In other words, during the first months at the new position, the superiors will not be completely strict in dealing with the new leader while he, in turn, will be slow in innovations until the deeds initiated by his predecessor are complete.

One must also not disregard the pressure from below, from subordinates who in every possible way endeavor to let the new man know that they prefer in the future to work in the old style, as they are accustomed. The new manager is very much like a stepmother who must change apartments merely for the sake of no longer hearing from the children: "But our mother didn't put that here...."

The new manager should proceed slowly also because his subdivision is inevitably closely linked to others and abrupt shifts in the forms and methods of work can disrupt the normal functioning of the organization as a whole.

The last factor by number, but far from the last in significance for the indecisiveness of a new man, is that his predecessor most often has become his immediate superior or holds a higher position in the same organization. In this situation to commence a fundamental transformation of the subdivision's work means to place in doubt the effectiveness of his chief's activities in the previous position and thereby the decision of the even higher management to promote him.

In such a situation, the new manager urged on by a desire, on the one hand, to more quickly show himself and win authority and, on the other, to avoid the mistakes and reputation of a daredevil, usually chooses one of the easily predicted and unproductive strategies of conduct which determines his activities during the first period after assuming the position.

Four Paths to a Blind Alley

No matter how diverse are the natures, education or experience of persons who come into a new management position, many of them choose one out of four lines of conduct, demonstrating here an amazing uniformity.

The first line of conduct is reminiscent of the actions of a mountain climber who is climbing in the middle of a line or a figure skater performing the required exercises. Characteristic of this is increased caution. Ordinarily, such a manager gives too great importance to the advice of the new superior to study the system of relationships and understand what is what. For this reason, he wastes all his energy on delving into the particular features of his predecessor's work in order to then repeat his actions as if this were the truth of the highest order. He buries his own ideas or generally discards them as naive or unsound. As for relations with subordinates, he quickly realizes what they can and want to do and then endeavors not to demand any more from them in order to avoid conflicts. As a result, his own estimate of success begins to be determined by how well he has "fit into" the organization and maintained the level of work achieved by his predecessor. He endeavors not to think about a possible rise in this level.

The manager who has chosen the second line of conduct out of hand judges the methods previously employed in his new subdivision as completely unsatisfactory and puts his colleagues and even leaders in the category of indifferent mediocrities. Without allowing himself time to reconnoiter, he immediately goes over to the attack, endeavoring to immediately make everything "normal." He immediately explains to his subordinates how poorly they work and what an effort they must make in order to begin to perform their duties at least

satisfactorily. He begins to prove to his colleagues that precisely his way is the best and most important for them and that they should jump on his bandwagon more quickly. If he does not encounter support, then he begins to show disregard for his colleagues, at any occasion he endeavors to defame their competence and at times even resolves to rebuke his own superior as supposedly times have changes.... Such a leader views his success as depending upon the number of subordinates whom he has succeeded in winning over to his side and the time which it has taken, as he feels, for his subdivision to get out of the "dead zone."

The person who has chosen the third line of conduct behaves like a horse over whose eyes mirrored blinders have been put making it possible for it to see only backwards. Such a leader, upon encountering the very first difficulties of the new job, finds a way out in continuing to do what he had done in his previous job. Such a situation can be observed particularly frequently if the leader has been promoted from below. For example, a shop chief who has been promoted from the senior foreman, instead of being involved in a reorganization of the entire shop, as before continues to supervise all the details of his former section, taking over from the new chief of this subdivision.

The person who adheres to the fourth lines of conduct is like a shaman who has gone for the first time into a bathroom and tries to get water using his ordinary incantations. Such a manager endeavors to handle the new job by merely repeating those procedures and methods which brought him success in the previous position. Here he argues apparently in a completely logical manner: "Since my previous style of management led to the fact that precisely I was chosen for promotion, then obviously they expect that I will perform in the same manner here." But instead of a sober analysis of the particular features and difficulties of the new duties, he industriously repeats the habitual methods which often are completely out of place in the new situation.

All the described lines of conduct lead the new managers into a blind alley as the work of the new subdivision does not improve but may even deteriorate while their authority declines both among subordinates and colleagues. Later on they even lose the confidence of the superior management which at one time promoted them.

The Strategy of Effectiveness

Fortunately, a majority of the persons who have been promoted manage to escape the blind alley and demonstrate their capacity to effectively manage more important subdivisions. Obviously they succeed in intuitively feeling out a strategy of adaptation to the new duties. What is this strategy? Can it be made generally available and not just a privilege of the more gifted managers? Research by American specialists in the management area have shown that such a strategy can be formalized. In the opinion of the authors Thomson and Waters,[1] this is best interpreted as a breakthrough strategy.

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[1] H. A. Thomson and J. A. Waters, "Transfer to a New Job: Breakthrough Instead of Introduction," S.A.M. ADVANCED MANAGEMENT JOURNAL, March-May 1979.

Its essence consists in splitting the process of adapting to the new management position into three stages, in each of which the manager should direct his efforts at solving completely specific tasks.

Stage I--Consider and plan, but not passively, rather actively, in order as quickly as possible to ascertain the overall tasks and goals of the subdivision, to determine those "pitfalls" in its activities the elimination of which will ensure the greatest rise in the productivity and work quality of the collective.

Stage II--To set the goals of the assault groups, in other words, to select several projects the implementation of which will substantially increase the work efficiency of the subdivision and, even more importantly, enrich everyone with the valuable experience of joint work.

Stage III--To outline the routes of advance and begin the assault, that is, to set to carrying out the selected projects on the basis of a careful planning of the work by all co-workers. This will help them assimilate the new manager's style along the way and prepare for carrying out even more complex tasks in the future.

Of course, it is not simple to implement such a three-stage breakthrough strategy and a new manager can be confronted with difficulties and questions. For this reason, it is obviously worthwhile to describe in greater detail the content of a manager's activities in each of these stages.

Stage I--The first question which inevitably arises for a leader who has determined to follow the breakthrough strategy is how to quickly find the "pitfalls" and bottlenecks in the subdivision and to outline plans for eliminating them. It is not worth relying solely on one's intellect. Behind the plans for reforms should stand primarily a good knowledge of the given subdivision's activities and it is impossible to acquire such knowledge over several weeks. For this reason in such a situation it is better to dust off plans which were already proposed at one time, but had not been implemented either due to a lack of forces and time, or because of an unfavorable situation or for reasons of resistance from other subdivisions. If there is nothing to dust off, then one must not despair and run up the white flag. One must endeavor to gain ideas from others including the superior management, colleagues and subordinates.

Before coming out with his own proposals, the manager should carefully investigate what has been done or would be done in accord with the previously adopted decisions to eliminate the bottlenecks detected by him. In other words, there is no reason whatsoever to try to commence a reorganization from scratch. It is much better to initially ascertain whether or not the already established foundation can be employed. The previous leader of the given subdivision can help in carrying out this task.

It is hard to overestimate the importance of talking with colleague managers from other subdivisions in the organization. One should not wait until the immediate service duties bring you into contact, but rather it is better to pay "courtesy calls" on them and endeavor to ascertain their claims against the work of your subdivision.

There is the special question of establishing relations with the new subordinates who always cautiously await your first steps. There is no need to try to build up your authority, from the very outset depicting yourself as totally in charge. It is better to initially propose that subordinates state their ideas on ways to improve the subdivision's work and then constantly keep them up on the course of those tasks which you have outlined along with the superior management. In constantly encouraging subordinates to state their proposals on the ways to achieve these goals, you will gradually be able to establish normal business-like relations the importance of which need scarcely be recalled.

Stage II--Let us assume that the new manager has succeeded in surmounting the barrier of mistrust among subordinates and they have showered him with ideas about ways to improve the subdivision's work. Among these ideas, of course, will be numerous unrealistic ones, but a number of proposals will be found which are quite suitable for implementation. How to proceed now? The main thing is to refrain from a temptation to set to implementing all the valuable projects as this would lead either to a dissipation of resources or certainly would not lead to rapid tangible results which the newly appointed manager so needs.

It is essential to choose not more than one or two projects, having let the remaining affairs move at their former pace. Of course, it is not easy to make the choice all the more as there is still little experience in working in the new job. for this reason it is obviously best to select the projects proceeding from the following criteria:

Importance and timeliness. The project should be aimed at solving problems which are vitally important for the given subdivision and have already long been awaiting their resolution. Otherwise, your proposals will be viewed as an avoiding of truly important problems and you will not receive support.

Feasibility. If the results of implementing the project are not apparent and feasible, then the executors cannot judge whether they can achieve anything under your leadership and whether it is worth trying.

Brevity. The implementation of the projects selected by you should bring tangible results no later than in 4-6 weeks, otherwise the enthusiasm of your colleagues will begin to flag and hence they will begin to work less zealously and this generally can jeopardize the implementation of the project.

Autonomy. One should first set out only after those projects which can be implemented within your powers and available resources. All projects the fulfillment of which require additional approval from above or the allocating of additional resources should be put off for later as at present they are dangerous for you.

Pursuasiveness. The implementation of the selected projects should confirm your ability to effectively employ the new methods not previously used in the given subdivision or your ability to significantly increase labor productivity in the subdivision. At the same time, the "bar" should not be put up too high. Without fail you must take it on the first try and personal records are not to the point here.

In other words, at first set to a partial task, but one stemming from the general problem which your new subdivision must solve.

Stage III--In beginning to implement the projects selected by you, remember that it is equally important for you to achieve the designated goals and to teach your new subordinates to work within more rigid and disciplined management methods. Precisely this habit will create a firm foundation for your successful joint activities when you must take on even more complex tasks. In developing such a habit, it is wise to follow the following recommendations:

1) For each co-worker set clear, precise and maximally specific goals;

2) Set for each co-worker a work plan which would clearly indicate what he is obliged to do and when. The preparation of such plans will make it possible to more profoundly work out a common plan of actions to implement the selected projects and will exclude misunderstandings of the sort "but I didn't know that I had to do this...." As yet, you are still too little acquainted with your new subordinates and a certain formality will not hurt you;

3) Constantly supervise the implementation of the project with the aid of brief weekly written reports from each executor or at weekly working conferences. "Trust but check!" The observance of this principle is particularly important in this period. In the first place, weekly reporting provides an opportunity to effectively check whether or not you have correctly worked out the plan of action and whether it needs an immediate adjustment. Secondly, it indicates to your subordinates that you are a purposeful leader and not a weathervane changing direction daily.

Of course, for workers accustomed to an unformal relationship with the previous manager, such an approach may initially not be to their liking. Do not be surprised if behind your back they at first call you a bureaucrat. But remember something else: if your approach begins to bring success and this tells positively upon the prestige and bonuses of your subordinates, then the voices of even the most inveterate "anarchists" will soon die down.

Without Illusions

The described strategy for the growth of the new manager can bring success in virtually any situation. But this does not mean that the manager who has chosen it cannot expect difficulties. Frequently, his own superiors are unable to set important goals for him, colleagues from other subdivisions are not very inclined to cooperate while subordinates endeavor to palm off on him only those projects which will bring benefit to the author personally but not necessarily for the subdivision as a whole.

The main thing in such a situation is not to give up and to remember that precisely you should make the greatest effort. Inertia, as we all understand from our school physics course, is the most difficult thing to overcome in commencing movement, but as soon as one moves from dead center it becomes easier and easier to gain speed. You have come to manage a new subdivision not for a day or a week, hold onto your patience and do not despair if during the first weeks your appeals remain a voice howling in the wilderness. This is the ordinary

state of affairs. Remember one thing: the very first successes will sharply alter the situation.

The realization of the breakthrough strategy will help you successfully commence your activities in that area where you are still little competent and will make it possible rather quickly (more quickly than usual) to become a true specialist on the key questions of the new subdivision's activities. When you feel real successes behind you, it will be easier for you to also recognize your weaknesses and you can with less detriment to your own self-esteem learn from colleagues, the superior management and even your own subordinates. It is important that you are able to establish good relations on the horizontal with the managers of other subdivisions. These relations develop in the course of real work and not by observing "diplomatic niceties."

Finally, the proposed path makes it possible for a new manager more smoothly and without conflict to carry out even a very substantial reform in the work methods of his subdivision because this reform is gradually realized in the carrying out of specific work and not all at once, like lightning out of the blue.

Who Will Help the New Man?

Of course, the breakthrough strategy helps a manager who has taken up a new position to successfully master the new duties and quickly confirm his skill and the correctness of the appointment, but his efforts will still cost a great deal. Those executives who consciously or intuitively do not take up such a strategy sooner or later will suffer a defeat of a new sort and this will end up either as a personal drama for them or with numerous losses for the organization. It is quite apparent that the management of any organization, and particularly a large one with a large managerial staff, must supervise the processes of adaptation for newly appointed executives. Such a practice already exists in a number of foreign companies where systems for accounting and evaluating management activities have been created and are functioning.

The creation of such a system starts by a questioning of the executives of all leaders who are asked to reply in detail to a naive question: "What do you specifically do?" In other words, instead of drawing up job instructions from above, the executives are asked to describe the actual daily content of their activities and this often differs very significantly from the popular ideas. The collected information is generalized, it is evaluated for the executives of each level and for each type of subdivision and the basic types of activity and range of tasks are established. Included in the tasks are those operations the performance of which, as practice indicates, is truly essential for ensuring the efficient work of one or another subdivision.

In order to increase the objectiveness of such lists of duties, the management usually forms a special group the members of which include the leaders of that level for which one or another list has been compiled. Included in the list are experienced executives, "middle-level men," executives with the reputation of "stars" and leaders who have the reputation of innovators. Usually the group assembles once, but it must work until the appropriate list of duties is finally approved, even if they must sit 14 hours for this.

The system is supplemented by two other documents: an evaluation sheet and a grading sheet. The evaluation sheet contains the same list of duties and has columns for grading the performance of each type of duties in points from 0 to 4 (0--poor, 4--excellent). The grading sheet determines the average weighted grade for the executive's activities and for the weighing they use the relative weights characterizing the importance of each of the basic spheres in the activities of the given-level executive. The weights are also established at the session of the temporary special group and for this reason reflect the actual importance of the work and not those ideas which the superior management of the organization may have.

The evaluation documents twice a year are filled out by the superior of the given executive who then receives signed copies of them.

The introduction of such a system into the organization sharply improves the status of newly appointed executives. In beginning to carry out their duties, they can immediately know perfectly clearly what precisely should be their actual concern, what is the relative importance of their basic types of activities, who will evaluate them, and how. At the same time, the initiative of the new executive is in no way thwarted as it is only possible to recommend to him what must be done in order to work no less successfully than their more experienced colleagues. No one demands that they literally adhere to the recommended list of work no more than anyone is prescribing methods which they can use for this.

It is not difficult to note that the existence of such a system for calculating and assessing management labor to no degree contradicts the thesis on the need for a newly appointed executive to adhere to a breakthrough strategy. In relying on such a system, a novice can ensure for himself at least satisfactory evaluations from the very start. But if he is more ambitious and wants to achieve new heights, then precisely the breakthrough strategy helps him in this.

In other words, an executive in arriving in a new position is in no way doomed to feel out the correct path of actions through the difficult and dangerous trial-and-error method. The easier and more direct path not only to smoothing out the consequences of the transfer of executive personnel, but also to ensuring maximum effectiveness from such a transfer consists in utilizing the above-described scientific methods for the adaptation of newly appointed executives.

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